IH70 Motherboard

Mini-ITX SBC with w/ Intel® 4th Generation Core i3/i5/i7 Processor, VGA, LVDS, Dual Giga Ethernet, USB 3.0 and Mini-PCIe Interface.

User Manual / Engineering Spec.

Version 1.0

FCC Statement

This device complies with part 15 FCC rules. Operation is subject to the following two conditions：

- This device may not cause harmful interference.
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class "a" digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at him own expense.

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Warranty

We warrant that each of its products will be free from material and workmanship defects for a period of one year from the invoice date. If the customer discovers a defect, We will, at its option, repair or replace the defective product at no charge to the customer, provided it is returned during the warranty period of one year, with transportation charges prepaid. The returned product must be properly packaged in its original packaging to obtain warranty service.

If the serial number and the product shipping data differ by over 30 days, the in-warranty service will be made according to the shipping date. In the serial numbers the third and fourth two digits give the year of manufacture, and the fifth digit means the month (e. g., with A for October, B for November and C for December).

For example, the serial number 1W11Axxxxxxxx means October of year 2011.

Packing List

Before using this Motherboard, please make sure that all the items listed below are present in your package：

- IH70 Motherboard
- HDD SATA Cable
- User's Manual & Driver DVD

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Customer Service

We provide service guide for any problem as follow steps： The first, contact with your distributor, sales representative, or our customer service center for technical support if you need additional assistance. You may have the following information ready before you call：

- Product serial number
- Peripheral attachments
- Software (OS, version, application software, etc.)
- Description of complete problem
- The exact wording of any error messages

In addition, free technical support is available from our engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products. Please do not hesitate to call or e-mail us.

Safety Precautions

- **Warning!**

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronic personnel should open the PC chassis.

- **Caution!**

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

Safety and Warranty

1. Please read these safety instructions carefully.
2. Please keep this user's manual for later reference.
3. Please disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
14. If any of the following situations arises, get the equipment checked by service personnel:
    A. The power cord or plug is damaged.
    B. Liquid has penetrated into the equipment.
    C. The equipment has been exposed to moisture.
    D. The equipment does not work well, or you cannot get it to work according to the user's manual.
    E. The equipment has been dropped and damaged.
    F. The equipment has obvious signs of breakage.
15. Do not leave this equipment in an uncontrolled environment where the storage temperature is below -20° C (-4°F) or above 60° C (140° F). It may damage the equipment.

Revision History

Version	Date	Note	Author
1.0	2014.10.7	Initial Draft	Patrick Hsien

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CHAPTER 1

General Information

This chapter includes the IH70 Motherboard background information.

Sections include:

- Introduction
- Feature
- Motherboard Specification
- Function Block
- Board Dimensions

Chapter 1 General Information

1.1 Introduction

The IH70 SBC is integrated with Intel®QM87 chipset, 17x17mm, and Socket G3 Intel® 4th Generation Core i7i5/i3 Processor. The Intel®4th Generation Core™ processor based on 64-bit, multi-core processors built on 22-nanometer process technology.

The processors are designed for a two-chip platform consisting of a processor and Platform Controller Hub (PCH). The processors are designed to be used with the Mobile chipset.

In peripheral connectivity, IH70 SBC features with three Mini-PCIe I/O ports, , two Serial ATA III (6Gb/s)connectors, six Serial Port (Three Connector; Three Pin Header) ,six Super-Speed USB 3.0 connectors(Four Connector ; Two Pin Header) and four Hi-Speed USB 2.0 connectors(Four Pin Header) .Additionally, IH70 SBC build-in a 12V DC-IN power adapter.

Thus, the IH70 SBC is designed to satisfy most of the applications in the industrial computer market, such as Gaming, POS, KIOSK, Industrial Automation, and Programmable Control System. It is a compact design to meet the demanding performance requirements of today's business and industrial applications.

1.2 Feature

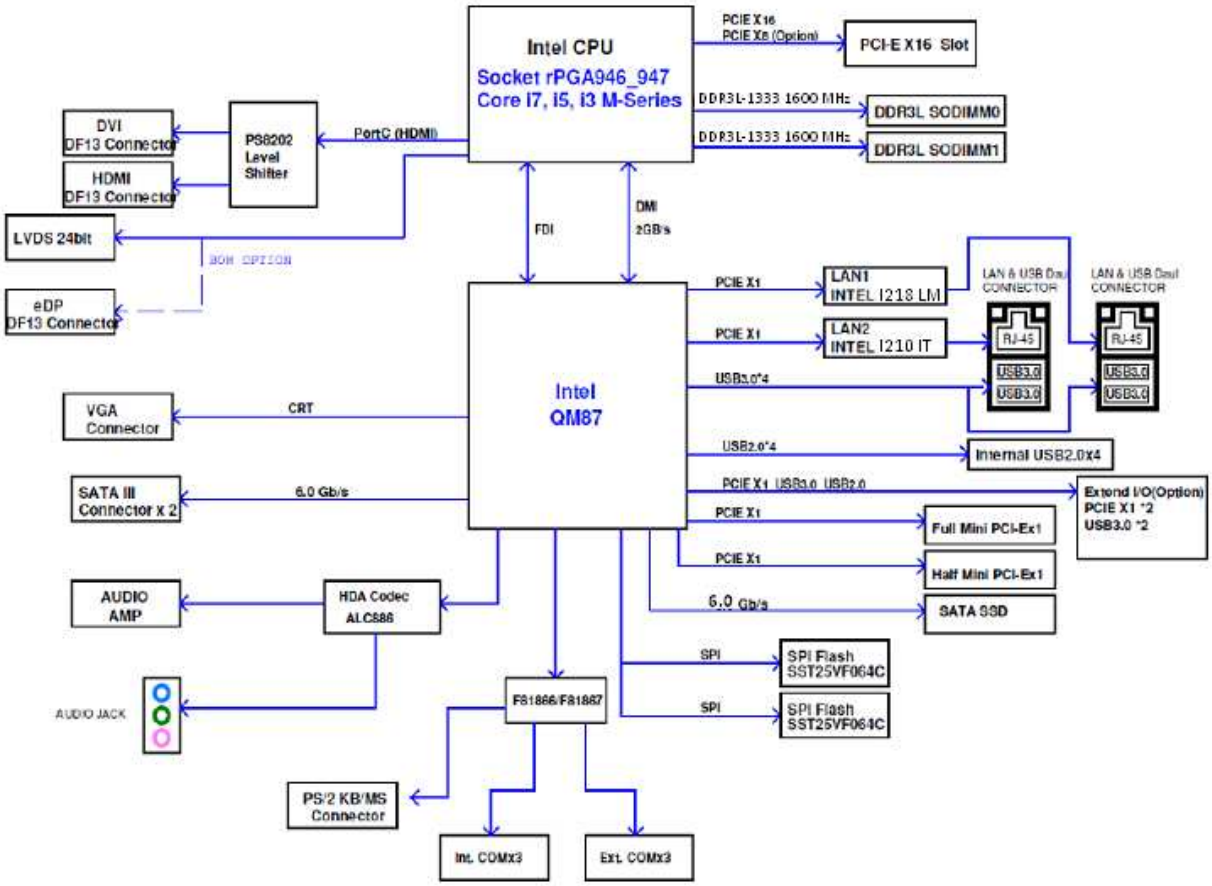
- Mini-ITX Form Factor (170mm x 170mm)
- Supports Socket G3 Intel® 4th Generation Core i3/i5/i7 Processor
- System memory up to 16GB DDR3L 1333/1600, SO-DIMM
- Intel® QM87 Chipset
- Intel® HD Graphics 4600. Integrated Graphics Engine.
- Intel® I210IT Gigabit-LAN Controller + I218LM Gigabit-LAN PHY r
- 3 x Mini PCIe, 6 x COM, 6 x USB3.0, 4 x USB 2.0 ,2 x SATAIII, 8 x GPIO ports, 1 x HDMI,1xeDP(By BOM Option),1 x PCIe x 16, 1 x LPT port

1.3 Motherboard Specifications

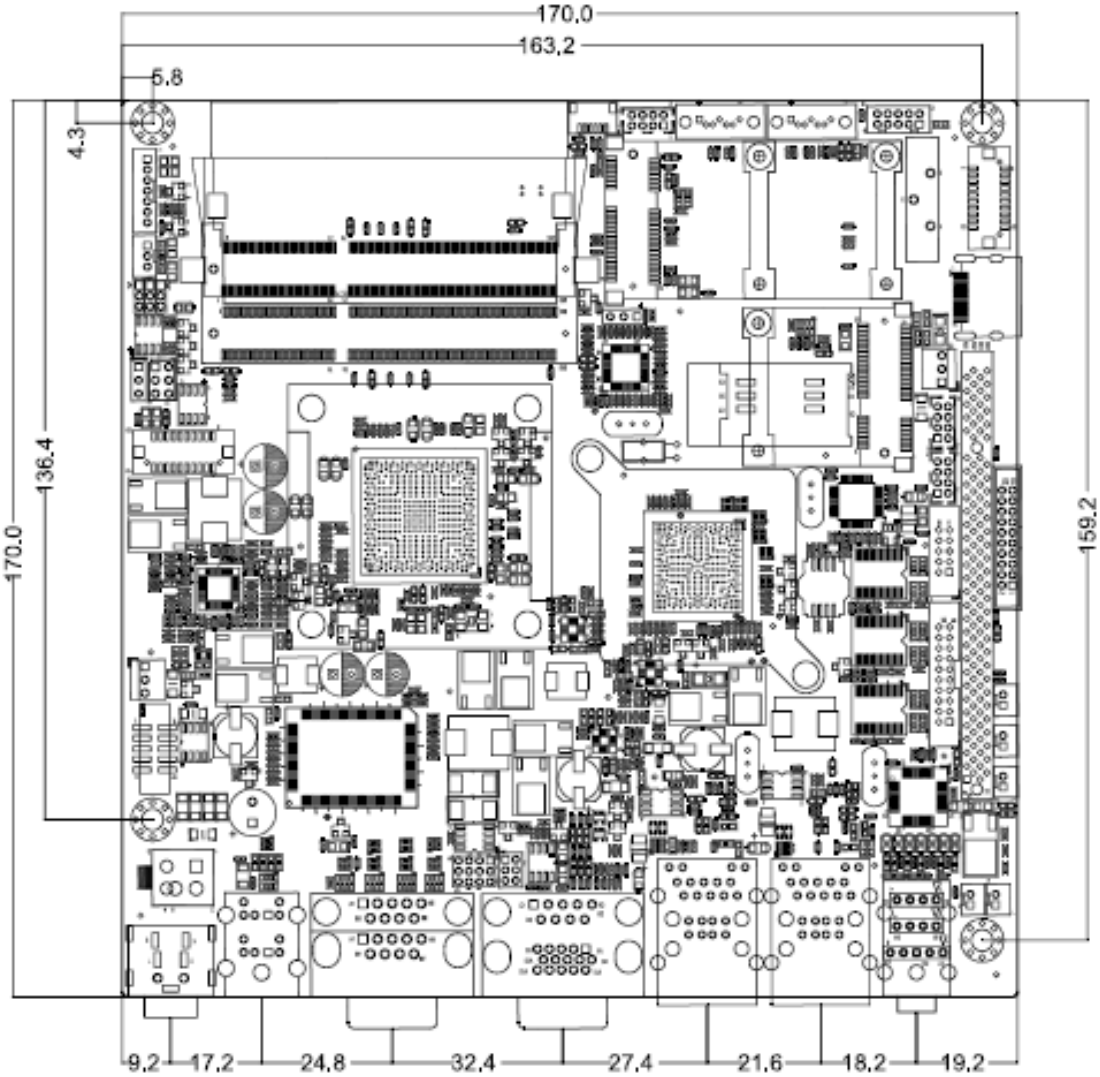
CPU Type	Intel® 4th Generation Core i3/i5/i7 Processor
Chipset	Intel® QM87
BIOS	AMI System BIOS
Graphic	Intel® HD Graphics 4600 support DX11, OGL4.0
LCD interface	Dual-channel 24 bit LVDS Up to 1440 x 900 @ 60Hz
Resolution	VGA mode： Up to 1920 x 1200 @ 60Hz DVI： 1920 x 1200 @ 60Hz HDMI： 1920 x 1200 @ 60Hz LVDS ： 1920 x 1200 @ 60Hz ；co-lay eDP(by BOM Option)
Multiple Display	VGA+LVDS(eDP)+HDMI,VGA+LVDS(eDP)+DVI,VGA+HDMI+DVI, HDMI+LVDS(eDP)+DVI,VGA+HDMI+HDMI,VGA+DVI+DVI, LVDS(eDP)+HDMI+HDMI, LVDS(eDP)+DVI+DVI
LAN	2 x Giga LAN (Intel® I210IT Gigabit-LAN Controller + I218LM Gigabit-LAN PHY)
Memory Type	2 x SO-DIMM socket, supports up to 16GB DDR3L 1333/1600
Super I/O	Fintek F81867
Sound	Realtek ALC886 HD Audio Codec
USB	6 ports, USB 3.0 (4 x USB Connector, 2 x USB pin-header) 4 ports, USB 2.0 (4 x USB pin-header)
Edge Connectors	1 x DC-IN Jack (+12V) 1 x VGA out connector 2 x Gigabit LAN RJ-45 1 x RS232/422/485 2 x RS232 4 x USB 3.0 connector 2 x PS2 1 x Audio Jack(Line in, Line out, Mic in)
On Board Pin-Header Connectors	3 x RS-232 (COM2.COM5.COM6) 2x5 pin-header 4 x USB 2.0 2 x USB3.0 1 x DVI/HDMI by DF-13 20-pin connector 1 x LVDS by DF-13 40-pin connector 1 x eDP by DF-13 20-pin connector(Optional) 2 x SATA III 1 x 2x4-pin wafer for SATA power 2 x 2-pin pin-header for speaker (with Amplifier): Left, Right 1 x 10-pin pin-header for DIO 1 x 3-pin digital panel backlight brightness controller 1 x 7-pin inverter 1 x 2x2-pin DC-in 12V connector 1 x 10-pin wafer for Front Panel(2x5) 2 x 2-pin wafer for +5V external power (Red) 1 x 2-pin wafer for 12V external power (Yellow) 1 x 3-pin pin-header for CPU Fan (smart fan) 1 x 20-pin box header for LPT Port 1 x 6-pin wafer for external SIM Card daughter board
Power Connector	Input: 4-pin Power-input connector
Expansion Slots	3 x Mini PCIe slot 1 x PCIe x 16 slot
Form Factor	Mini-ITX
Dimensions	170mm x 170mm

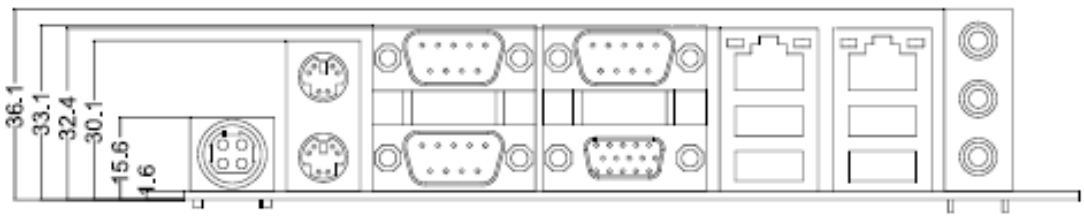
Mechanical & environmental	Operating temperature: 0 deg. C to 60 deg. C Shock: Operating 15G, 11ms duration Vibration: Operating 5 Hz~500Hz / 1Grms / 3 Axis Certification: CE, FCC, RoHS

Function Block



Board dimensions





CHAPTER 2

Installations

This chapter provides information on how to use the jumps and connectors on the IH70 Motherboard.
The Sections include:

- Memory Module Installation
- I / O Equipment Installation
- Setting the Jumpers
- Connectors on IH70 Motherboard

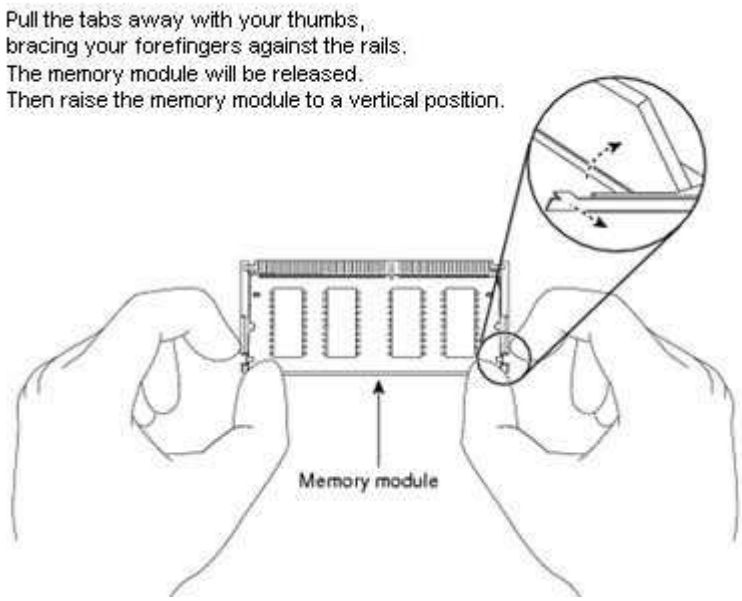
Chapter 2 Installations

2.1 Memory Module（SO-DIMM）Installation

The IH70 Motherboard provides two 204-pin SODIMM slot. The socket supports up to 16GB DDR3L 1333/1600 SDRAM. When installing the Memory device, please follow the steps below：

Step.1. Firmly insert the SO-DIMM at an angle into its slot. Align the SO-DIMM on the slot such that the notch on the SO-DIMM matches the break on the slot.

Step.2. Press downwards on SO-DIMM until the retaining clips at both ends fully snap back in place and the SO-DIMM is properly seated.


Pull the tabs away with your thumbs,
bracing your forefingers against the rails.
The memory module will be released.
Then raise the memory module to a vertical position.
Memory module

- Caution!

The SO-DIMM only fits in one correct orientation. It will cause permanent damage to the development board and the SO-DIMM if the SO-DIMM is forced into the slot at the incorrect orientation.

2.2 I/O Equipment Installation

2.2.1 12V DC-IN

The Motherboard allows plugging 12V DC-IN jack on the board without another power module converter under power consumption by Intel® 4th Generation Core i7/i5/i3 Processor and QM87 chipset.

2.2.2 Serial COM ports

Three RS-232 connectors build in the rear I/O. One optional COM ports support RS-422/485. When an optional touch-screen is ordered with PPC, serial com port can connect to a serial or an optional touch-screen.

2.2.3 External VGA

The Motherboard has one VGA port that can be connected to an external CRT/ LCD monitor. Use VGA cable to connect to an external CRT / LCD monitor, and connect the power cable to the outlet. The VGA connector is a standard 15-pin D-SUB connector.

2.2.4 Ethernet interface

The Motherboard is equipped with Intel® I210IT Gigabit-LAN Controller + I218LM Gigabit-LAN PHY which is fully compliant with the PCI 10/100/1000 Mbps Ethernet protocol compatible. It is supported by major network operating systems. The Ethernet ports provide two standard RJ-45 jacks.

2.2.5 USB ports

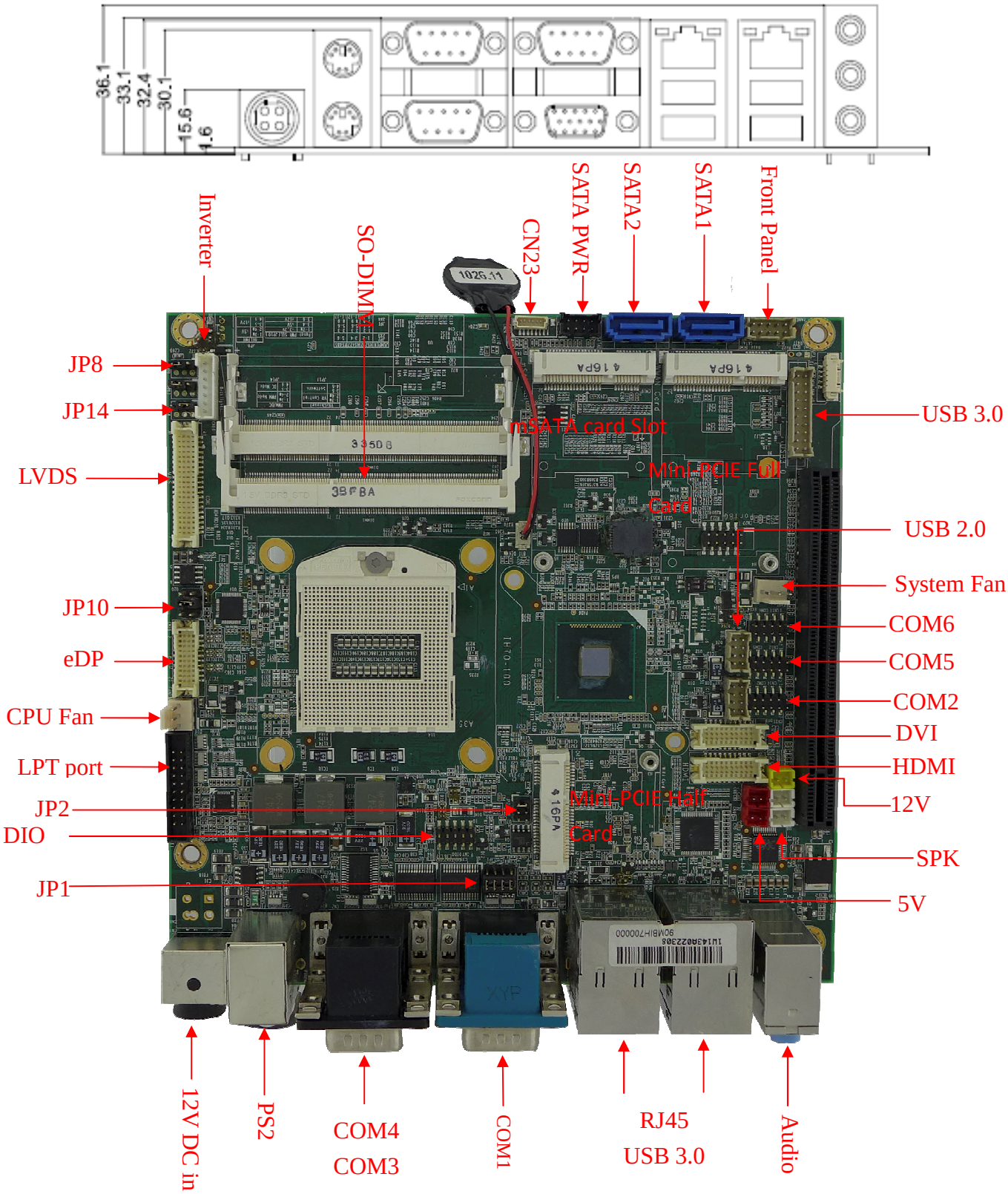
Eight USB devices (Four with pin headers) may be connected to the system though an adapter cable. Various adapters may come with USB ports. USB usually connect the external system to the system. The USB ports support hot plug-in connection. Whatever, you should install the device driver before you use the device.

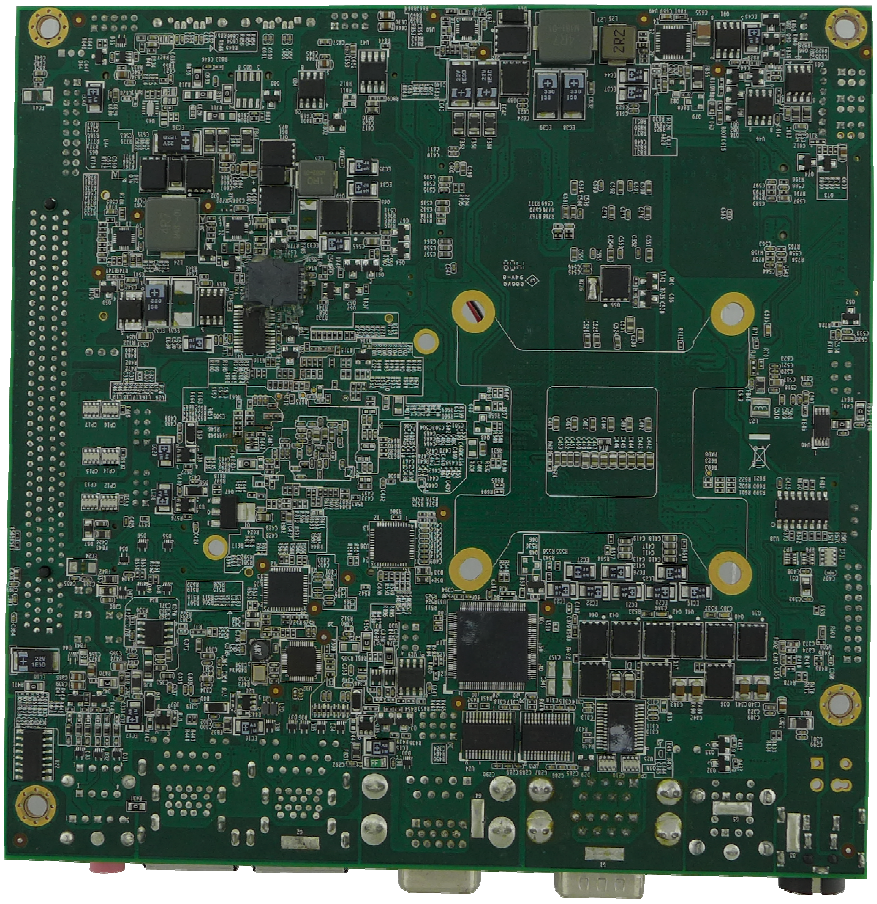
2.2.6 Audio function

The Audio 7.1 channel capabilities are provided by a Realtek ALC886 chipset supporting digital audio outputs. The audio interface includes three jacks: line-in, line-out and mic in.

2.3 Jumpers and Connectors

TOP

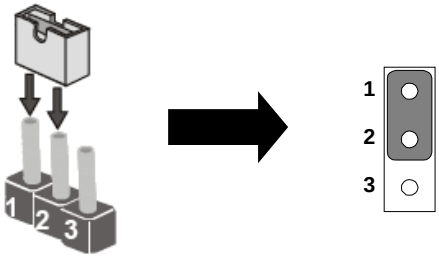




2.4 Jumper Setting

A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes. Generally, you simply need a standard cable to make most connections.

The jumper setting diagram is as below. If a jumper shorts pin 1 and pin 2, the setting diagram is shown as the right one.



The following tables list the function of each of the board's jumpers.

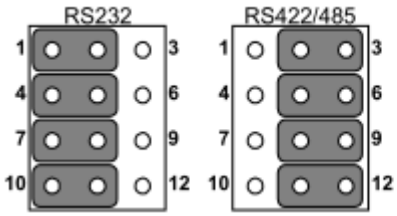
Label	Function	Note
SW1	Clear CMOS	
JP1	RS232 / RS422 / RS485 Selector	3x4 header , pitch 2.0mm
JP2	RS232 / RS422 / RS485 Selector	2x3 header , pitch 2.0mm
JP3	VR/Software	2x3 header , pitch 2.0mm
JP8	Back Light PWR	1x3 header , pitch 2.0mm
JP10	LVDS PWR Selector	2x3 header , pitch 2.5mm
JP14	PWM/DA	3x1 header , pitch 2.0mm

2.4.1 SW1:Clear CMOS

Normal Use

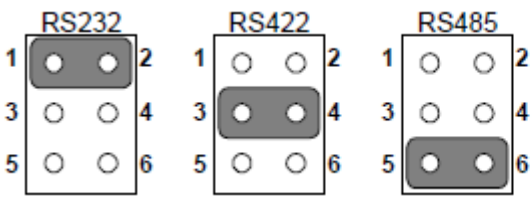
Clear CMOS

2.4.2 JP1: RS232 / RS422 / RS485 Selector for COM port



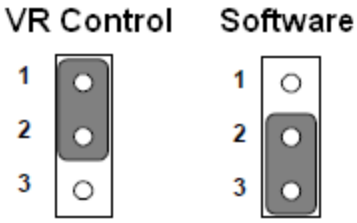
RS232	RS422/485
1-2	2-3
4-5	5-6
7-8	8-9
10-11	11-12

2.4.3 JP2 : RS232 / RS422 / RS485 Selector for COM port



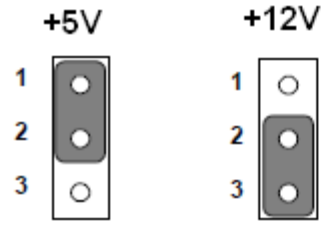
Pin No.	Functions
1 Short 2	RS232
3 Short 4	RS422
5 Short 6	RS485

2.4.4 JP3 : Brightness Control(VR/Software)



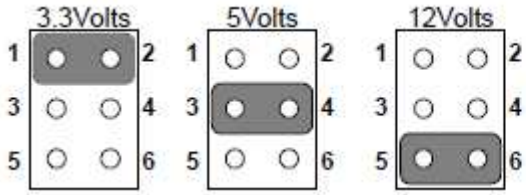
Pin No.	Functions
1 Short 2	VR Control
2 Short 3	Software

2.4.6 JP8 : Back Light PWR



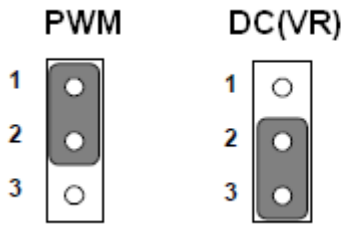
Pin No.	Functions
1 Short 2	+5V
2 Short 3	+12V

2.4.7 JP10: LCD Panel Voltage Select



Pin No.	Functions
1 Short 2	3.3Volts Selected
2 Short 3	5Volts Selected
5 Short 6	12Volts Selected

2.4.8 JP14 : Brightness Control(DC/PWM)



Pin No.	Functions
1 Short 2	PWM
2 Short 3	DC(VR)

2.5 Connectors and Pin Assignment

The table below lists the function of each of the board's connectors.

Label	Function	Note
CON1	LVDS Connector	40DP-1.25V
CN16	Digital Panel Backlight Inverter Connector	7x1 Wafer, pitch 2.0mm
CN17	Digital Panel Backlight Brightness Control	3x1 Wafer, pitch 2.0mm
CN14	COM2 for RS232	2x5 header, pitch 2.0mm
CN12,CN11	COM5、6 for RS232	2x5 header, pitch 2.0mm
USB1,2	USB 2.0 Connector	4x2 Wafer, pitch 2.0mm
CN27	USB 3.0 Connector	5x2 Wafer, pitch 2.0mm
FAN1	CPU Fan CONNECTOR	3x1 Pin Header
FAN2	System Fan Connector	3x1 Pin Header
PANEL1	System Function Connector	5x2 header ,pitch 2.0mm
CN6	12V External Power	2x1 header, pitch 2.0mm
CN8.CN9	5V External Power	2x1 header, pitch 2.0mm
CN20	SATA Power Connector	4x2 header ,pitch 2.54mm
CN13	HDMI Output Connector	20DP-1.25V
CN21	DVI Output Connector	20DP-1.25V
CN26	eDP Output Connector	20DP-1.25V
CN7	Digital I/O	2x5 Pin header, pitch 2.0mm
J1,J2	Speaker(Right/Left)	2x1 Wafer, pitch 2.0mm
CN10	Mini-PCIE Half card Slot	mini-PCIE slot, H:6.8mm
CN18	Mini-PCIE 3G Full Card Slot	mini-PCIE slot, H:6.8mm
CN19	mSATA card Slot	mini-PCIE slot, H:6.8mm
CN24	SIM Card Daughter Board Connector	6x1 Wafer, pitch 1.25mm
LPT1	Printer Port	2x10 header, pitch 2.0mm

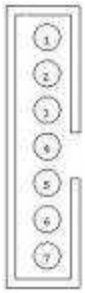
* Not Default Connector

2.5.1 CON1: LVDS Connector

Pin No.	SYMBOL	Pin No.	SYMBOL
1	LCDVDD	2	LVDSA_DATA0-
3	LCDVDD	4	LVDSA_DATA0+
5	LCDVDD	6	LVDSA_DATA1-
7	GND	8	LVDSA_DATA1+
9	GND	10	LVDSA_DATA2
11	GND	12	LVDSA_DATA2
13	GND	14	LVDSA_CLK-
15	GND	16	LVDSA_CLK+
17	GND	18	LVDSA_DATA3
19	GND	20	LVDSA_DATA3
21	GND	22	LVDSBDATA0-
23	GND	24	LVDSBDATA0+
25	GND	26	LVDSBDATA1-
27	GND	28	LVDSBDATA1+
29	GND	30	LVDSBDATA2-
31	GND	32	LVDSBDATA2+
33	GND	34	LVDSBCLK-
35	GND	36	LVDSBCLK+
37	GND	38	LVDSBDATA3
39	GND	40	LVDSBDATA3

***LCDVCC select by JP10**

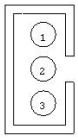
2.5.2 CN16: Digital Panel Backlight Inverter Connector



Pin No.	SYMBOL
1	VCC
2	VCC
3	VCC
4	GND
5	Black Light Control
6	GND
7	Black Light EN 5V

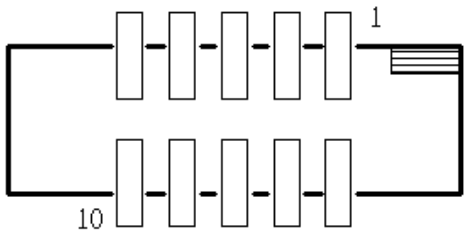
***Vcc level select by JP8**

2.5.3 CN17: Digital Panel Backlight Brightness Control



Pin No.	SYMBOL
1	VCC
2	Black Light Control
3	GND

2.5.4 CN14: Serial port COM2

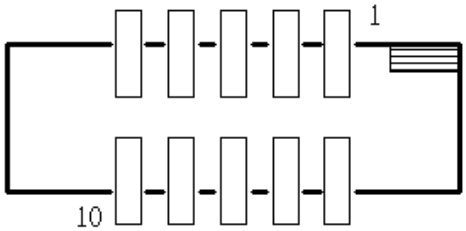


Pin	SYMBOL	Pin	SYMBOL
10	+V5S	9	GND
8	NRI2	7	NDTR2
6	NCTS2	5	NTXD2
4	NRTS2	3	NRXD2
2	NDSR2	1	NDCD2

2.5.5 CN12,CN11:COM5、COM6

The serial port COM5、6, which is RS232 only , is the Fintek I/O serial port.

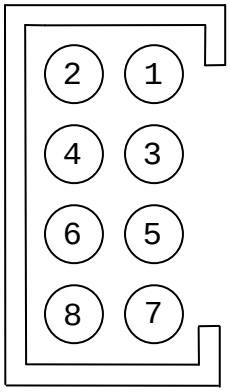
5x2 header, pitch 2.0mm



Pin No.	SYMBOL	Pin No.	SYMBOL
10	+V5S	9	GND
8	FK NRI5	7	FK NDTR5
6	FK NCTS5	5	FK NSOUT5
4	FK NRTS5	3	FK NSIN5
2	FK NDSR5	1	FK NDCD5

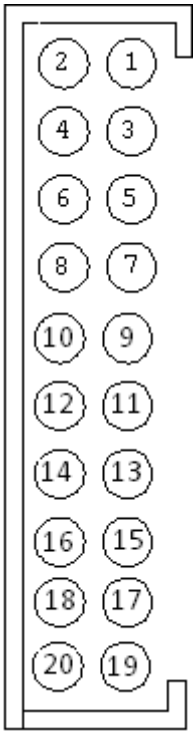
Pin No.	SYMBOL	Pin No.	SYMBOL
20	+V5S	19	GND
18	FK NRI6	17	FK NDTR6
16	FK NCTS6	15	FK NSOUT6
14	FK NRTS6	13	FK NSIN6
12	FK NDSR6	11	FK NDCD6

2.5.6 USB1,2 : USB 2.0 Wafer



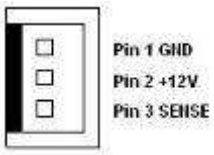
Pin	SYMBOL	Pin	SYMBOL
2	USBVCC	1	USBVCC
4	USB_P6-	3	USB_P7-
6	USB_P6+	5	USB_P7+
8	GND	7	GND

2.5.7 CN27:USB 3.0 Wafer



Pin	SYMBOL	Pin	SYMBOL
2	NC	1	USBVCC
4	USBVCC	3	USB3.0 RX3-
6	USB3.0 RX4-	5	USB3.0 RX3+
8	USB3.0 RX4-	7	GND
10	GND	9	USB3.0 TX3-
12	USB3.0 TX4-	11	USB3.0 TX3+
14	USB3.0 TX4-	13	GND
16	GND	15	USB_P6-
18	USB_P7-	17	USB_P6+
20	USB_P7+	19	NC

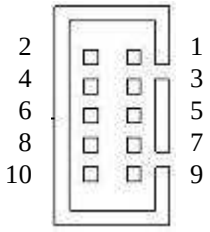
2.5.8 FAN1,FAN2:CPU & System FAN CONNECTOR



Pin	SYMBOL	Pin	SYMBOL
1	GND	2	+12V
3	CPU FAN Sense		

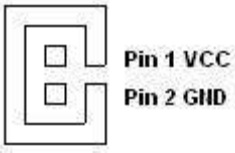
Pin	SYMBOL	Pin	SYMBOL
1	GND	2	+12V
3	System FAN Sense		

2.5.9 PANEL1: Front Panel System Function Connector



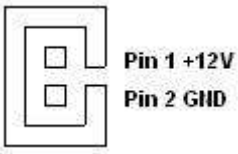
Pin	SYMBOL	Pin	SYMBOL
2	HD_LED+	1	PW_LED+
4	HD_LED-	3	PW_LED-
6	RT_BT1	5	PW_BT1
8	RT_BT2	7	PW_BT2
10	5VSB	9	RSEV

2.5.10 CN8,CN9:5V Output



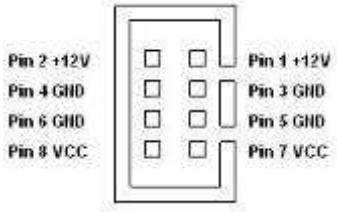
Pin	SYMBOL	Pin	SYMBOL
2	GND	1	VCC

2.5.11 CN6:12V Output



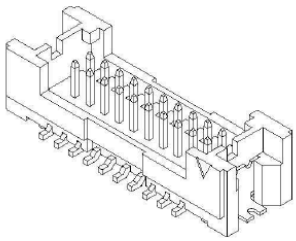
Pin	SYMBOL	Pin	SYMBOL
2	GND	1	+12V

2.5.12 CN20: SATA POWER



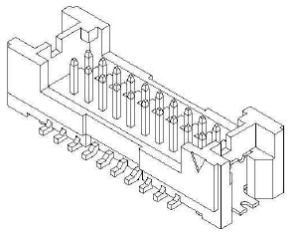
Pin	SYMBOL	Pin	SYMBOL
2	+12V	1	+12V
4	GND	3	GND
6	GND	5	GND
8	+5V	7	+5V

2.5.13 CN13:HDMI Output Connector



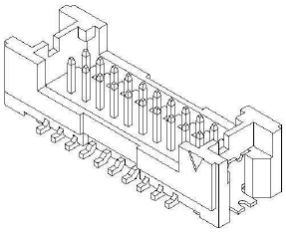
Pin No.	SYMBOL	Pin No.	SYMBOL
1	GND	2	HDMI_TMDS2-
3	GND	4	HDMI_TMDS2+
5	GND	6	HDMI_TMDS1-
7	GND	8	HDMI_TMDS1+
9	GND	10	HDMI_TMDS0-
11	HDMI HPD	12	HDMI_TMDS0+
13	NC	14	HDMI_CLK-
15	NC	16	HDMI_CLK+
17	HDMI 5V	18	HDMI_DDC_CLK
19	HDMI 5V	20	HDMI_DDC_DATA

2.5.14 CN21:DVI Output Connector



Pin No.	SYMBOL	Pin No.	SYMBOL
1	GND	2	TMDSB_DATA0-
3	GND	4	TMDSB_DATA0+
5	DVIC_LVDS_DET	6	TMDSB_DATA1-
7	DVIC_BKLTEN	8	TMDSB_DATA1+
9	DVIC_VDDEN	10	TMDSB_DATA2-
11	DVI_HOT_DETECT	12	TMDSB_DATA2+
13	LCDVDD	14	TMDSB_BLK-
15	LCDVDD	16	TMDSB_BLK+
17	+V5S	18	DVI1_DDC_CLK_R
19	+V5S	20	DVI_DDC_DAT_R

2.5.15 CN26:eDP Output Connector

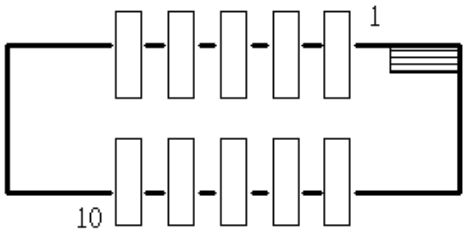


Pin No.	SYMBOL	Pin No.	SYMBOL
1	eDP Tx0+	2	eDP Panel Power (*1)
3	eDP Tx0-	4	eDP Panel Power (*1)
5	GND	6	eDP Backlight Power (*2)
7	eDP Tx1+	8	eDP Backlight Power (*2)
9	eDP Tx1-	10	eDP Backlight Power (*2)
11	GND	12	eDP HPD
13	eDP AUX+	14	GND
15	eDP AUX-	16	GND
17	eDP Backlight Enable	18	GND
19	eDP Brightness	20	GND

*1: eDP Panel Power select by JP10, refer to JP10 jumper setting for detail.

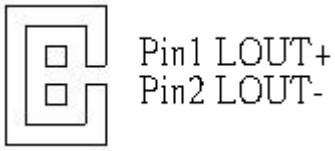
*2: eDP Backlight power select by JP8, refer to JP8 jumper setting for detail.

2.5.16 CN7: Digital I/O Connector

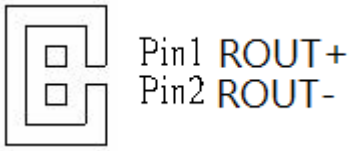


Pin	SYMBOL	Pin	SYMBOL
2	+5V	1	GND
4	Out1	3	Out3
6	Out0	5	Out2
8	IN2	7	IN3
10	IN0	9	IN1

2.5.17 J1,J2: Amplifier

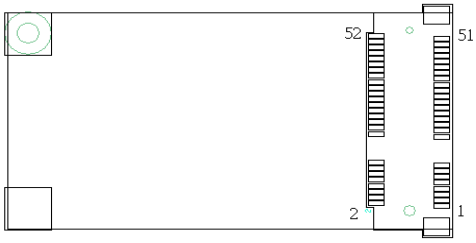


J2



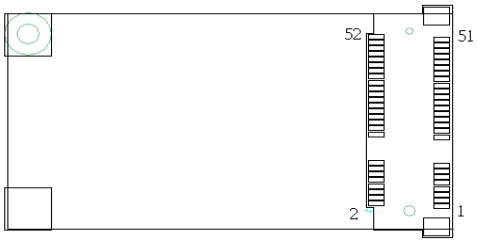
J1

2.5.18 CN10: Mini-PCIE Half card Slot



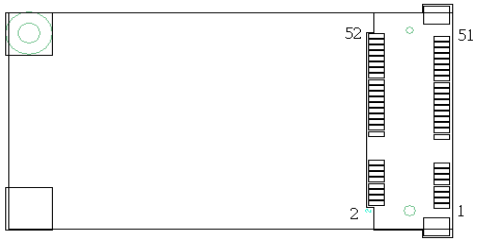
Pin	SYMBOL	Pin	SYMBOL
1	PCIE_WAKE#	2	+V3.3_WIFI
3	NC	4	GND
5	NC	6	+V1.5V
7	SLOT0_OE#	8	NC
9	GND	10	NC
11	CLK_PCIE_SLOT0_N	12	NC
13	CLK_PCIE_SLOT0_P	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	WiFi_EN
21	GND	22	BUF2_PLT_RST#
23	PCIE_RXN1_SLOT1	24	+3.3Vaux
25	PCIE_RXP1_SLOT1	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK_SB
31	PCIE_TXN1_SLOT1	32	SMB_DATA_SB
33	PCIE_TXP1_SLOT1	34	GND
35	GND	36	USB_PN10
37	GND	38	USB_PP10
39	+3.3Vaux	40	GND
41	+3.3Vaux	42	NC
43	GND	44	NC
45	CL_CLK	46	NC
47	CL_DATA	48	+1.5VS
49	CL_RST#	50	GND
51	+V3.3_WIFI	52	+V3.3_WIFI
m1	GND	m1	GND
m2	GND	m2	GND

2.5.19 CN18: Mini-PCIE 3G Full Card Slot



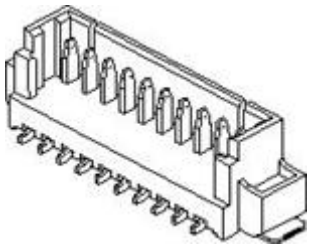
Pin	SYMBOL	Pin	SYMBOL
1	PCIE_WAKE#	2	+V3.3_3G
3	NC	4	GND
5	NC	6	+V1.5S
7	CLK_SLOT1_OE#	8	VREG_USIM
9	GND	10	USIM_DATA
11	CLK_PCIE_SLOT1_N	12	USIM_CLK
13	CLK_PCIE_SLOT1_P	14	USIM_RESET
15	GND	16	USIM_VPP
17	NC	18	GND
19	NC	20	3G-RFON
21	GND	22	BUF1_PLT_RST#
23	PCIE_RXN1_SLOT2	24	3V_GOBI_AUX
25	PCIE_RXP1_SLOT2	26	GND
27	GND	28	+V1.5S
29	GND	30	SMB_CLK_SB
31	PCIE_TXN1_SLOT2	32	SMB_DATA_SB
33	PCIE_TXP1_SLOT2	34	GND
35	GND	36	USB_PN11
37	GND	38	USB_PP11
39	3V_GOBI_AUX	40	GND
41	3V_GOBI_AUX	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+V1.5S
49	NC	50	GND
51	NC	52	+V3.3_3G
m1	GND	m1	GND
m2	GND	m2	GND

2.5.20 CN19: mSATA card Slot



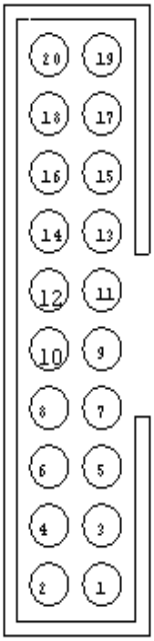
Pin	SYMBOL	Pin	SYMBOL
1	NC	2	+3.3S
3	NC	4	GND
5	NC	6	+1.5V
7	NC	8	NC
9	GND	10	NC
11	NC	12	NC
13	NC	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	NC
21	GND	22	PLTRST#
23	SATA_RXP1	24	+3.3S
25	SATA_RXN1	26	GND
27	GND	28	+1.5V
29	GND	30	NC
31	SATA_TXN1	32	NC
33	SATA_TXP1	34	GND
35	GND	36	NC
37	GND	38	NC
39	+V3.3S	40	GND
41	+V3.3S	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	SSD_LED#	50	GND
51	EC_BT_EN	52	+3.3V
m1	GND	m1	GND
m2	GND	m2	GND

2.5.21 CN24: SIM Card Daughter Board Connector



Pin	SYMBOL
1	VREG_USIM
2	USIM_RESET
3	USIM_CLK
4	GND
5	USIM_VPP
6	USIM_DATA

2.5.22 LPT1:Printer Port



Pin Number	SYMBOL	Pin Number	SYMBOL
1	LPT_STB#	2	LPT_PD0
3	LPT_PD1	4	LPT_PD2
5	LPT_PD3	6	LPT_PD4
7	LPT_PD5	8	LPT_PD6
9	LPT_PD7	10	ACK#
11	BUSY	12	PE
13	SLCT	14	LPT_AFD#
15	ERR#	16	LPT_INIT#
17	LPT_SLIN#	18	GND
19	GND	20	GND

CHAPTER 3

AMI BIOS Setup

1. Instruction
2. BIOS configuration
3. Using Recovery Wizard to Restore Computer

Chapter 3 AMI BIOS SETUP

3.1 How and When to Use BIOS Setup

For enter to the Tablet PC BIOS setup, you need to connect with an external USB keyboard, press "**Del**" key when the prompt appears on the screen during start up. The prompt screen shows only few seconds so need press Del key quickly.

**NOTICE

Updated BIOS version may be published after the manual is released. Check with the latest version of BIOS on website.

You may need to run BIOS setup utility when the below status.

1. Error message on sreen indicate to check BIOS setup.
2. Restoring the factory default settings.
3. Modifing the specific hardware specification
4. Want to optimize the specification.

In order to control the keyboard to select BIOS utility setup, you need

Keyboard Icon	Function Description
← →	Selects a menu title.
↑ ↓	Selects an item or option.
Enter	Go to the sub-menu when available. Opens or closes the option window when an item is selected.
Esc	To leave sub-menu and return to main menu.

**NOTICE

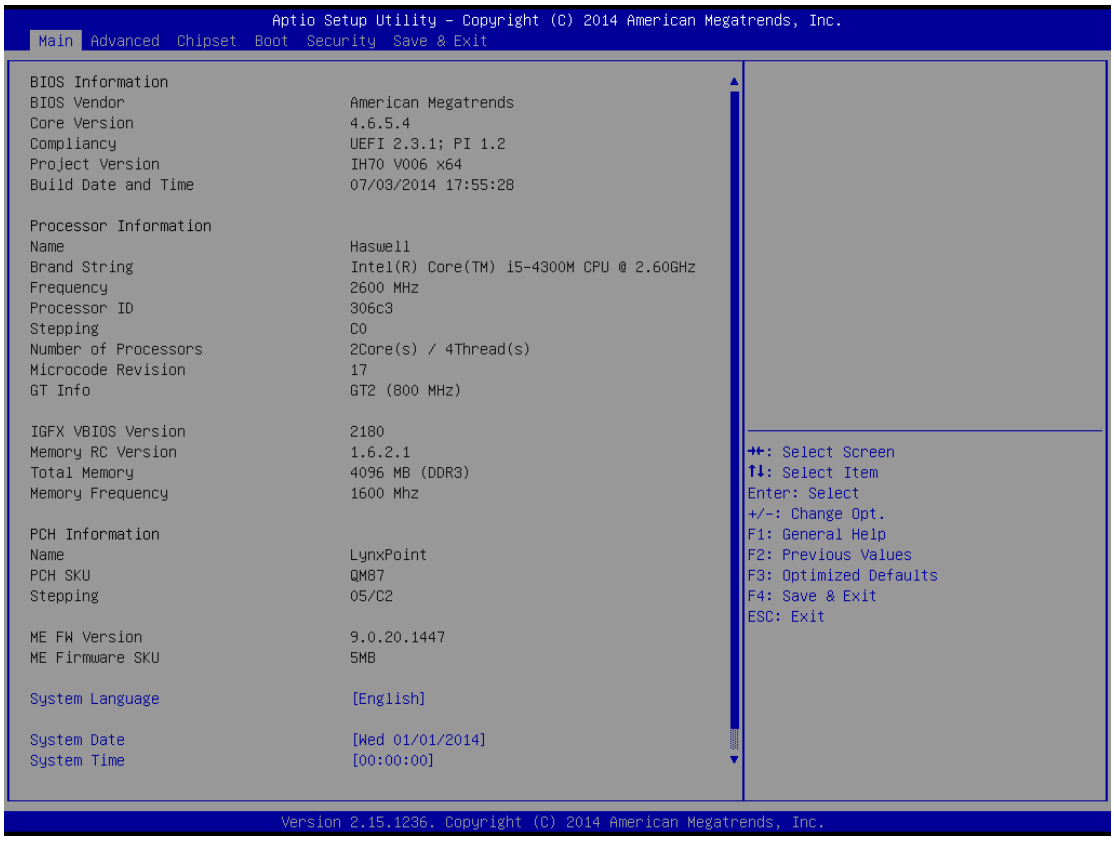
You can press the F1, F2, F3, F4, –/+, and Esc keys by connecting a USB keyboard to your tablet PC.

3.2 BIOS Functions

The IH70 has AMI BIOS built in and with a CMOS SETUP utility that allows users to configure required settings or to activate certain system features.

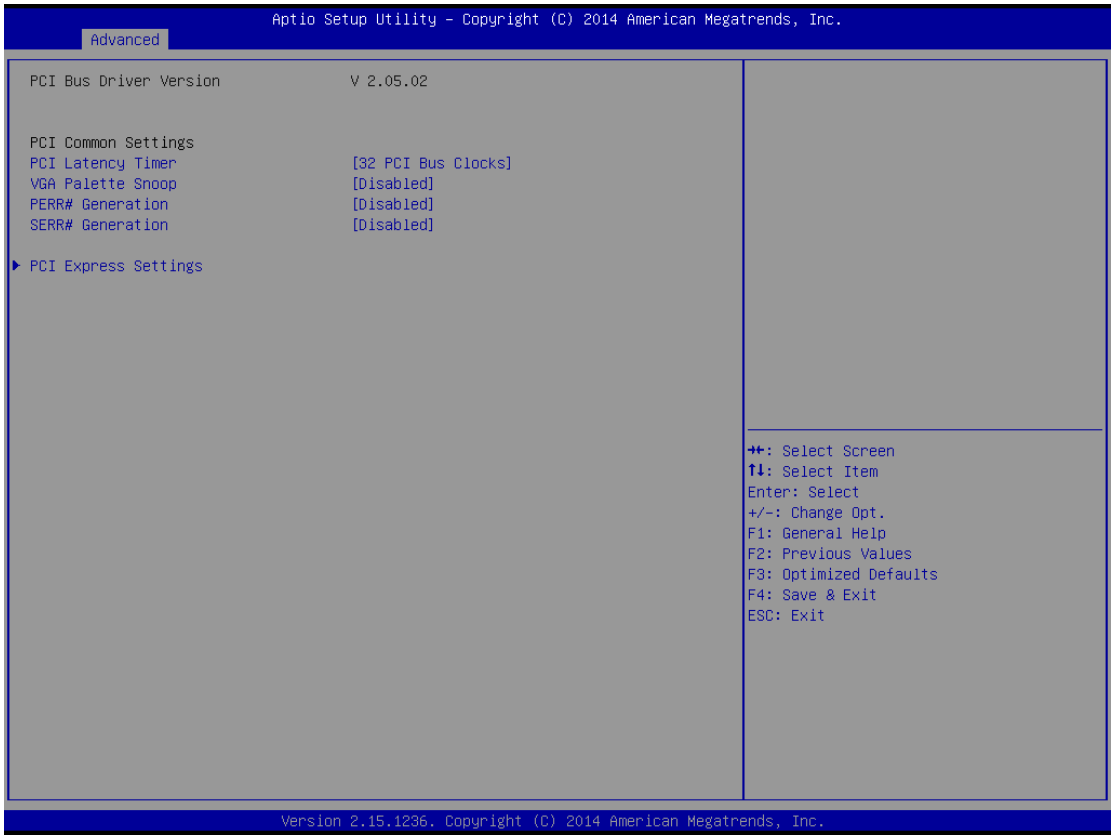
3.2.1 Main Menu

The Main menu contains the information of the Tablet system including BIOS version, processor RC version, system language, time, and date.

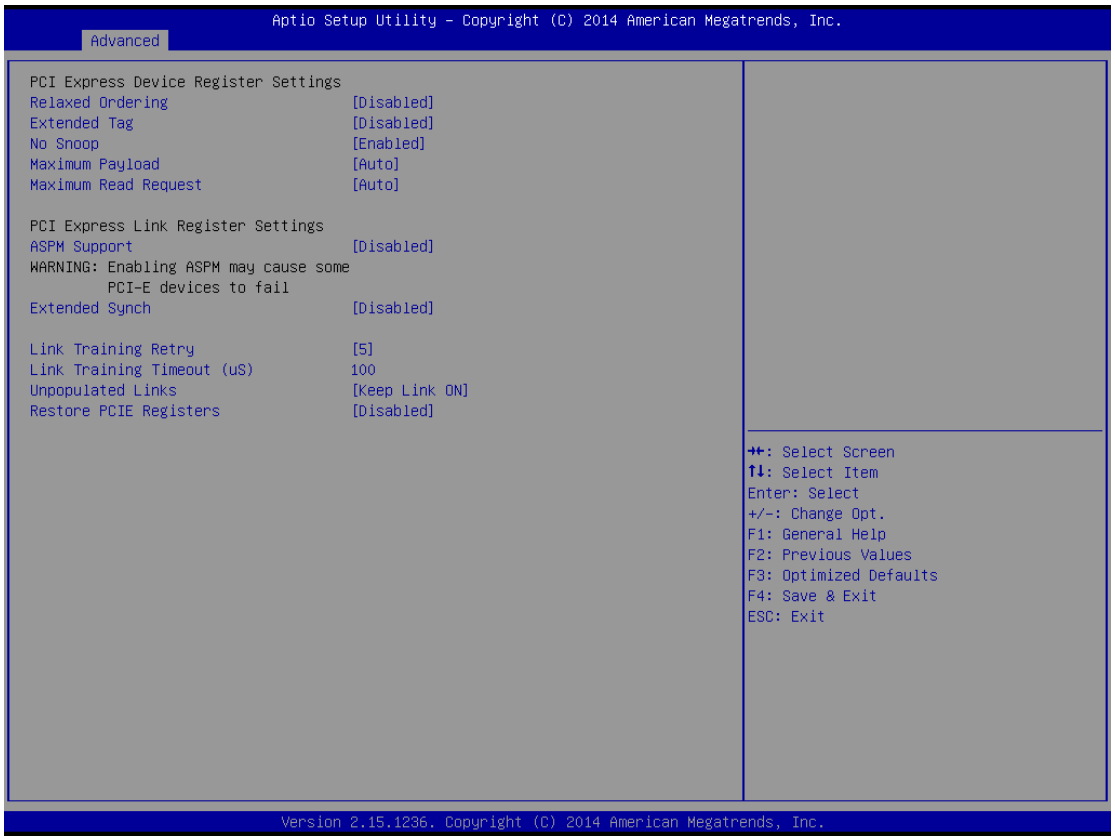


3.2.2 Advanced Setting

Select the Advanced tab from the IH70 setup menu to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. You can use the <Arrow> keys enter all Advanced BIOS Setup options. The Advanced BIOS Setup menu is shown below. The sub menus are described on the following pages.



3.2.2.1 PCI Express Device Register Settings



- **Relaxed Ordering**

Enable or disable Relaxed Ordering

- **Extended Tag**

Enable or disable Extended Tag

- **No Snoop**

Enable or disable No Snoop

- **Maximum Payload**

To set the Maximum Payload.

- **Maximum Read Request**

To set the Maximum Read Request

- **ASPM Support**

Enable or disable ASPM Support

- **Extended Synch**

Enable or disable Extended Synch

- **Link Training Retry**

To set the Link Training Retry

- **Link Training Timeout (uS)**

To set the Link Training Timeout(uS)

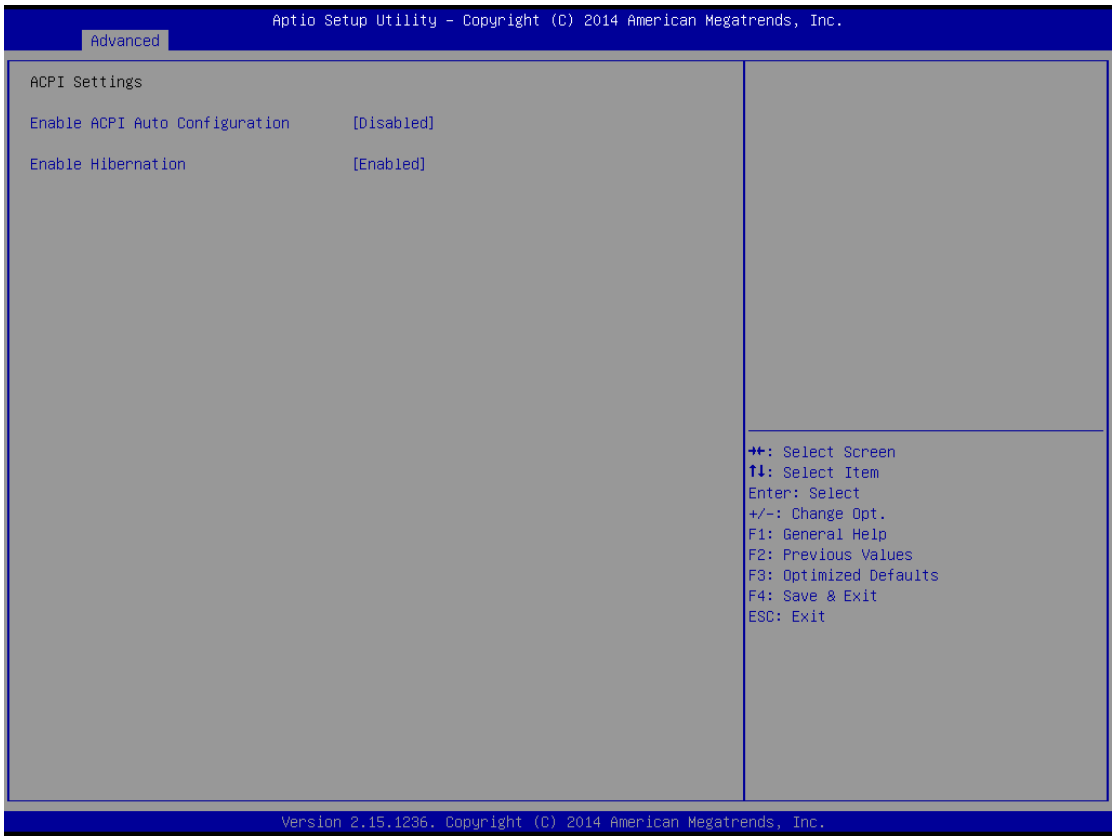
- **Unpopulated Links**

To set the Unpopulated Links

- **Restore PCIE Registers**

Enable or disable Restore PCIE Registers

3.2.2.2 ACPI Settings



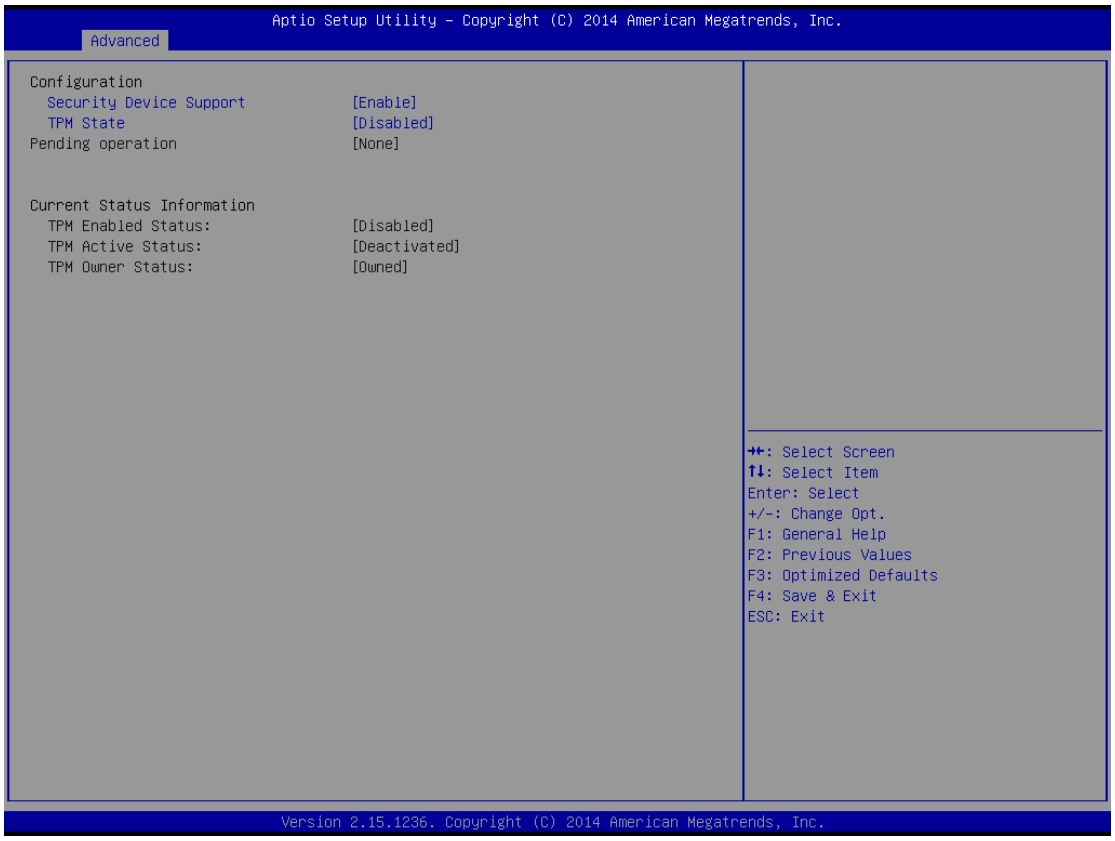
- **Enable ACPI Auto Configuration**

Enable or disable BIOS ACPI Auto Configuration

- **Enable Hibernation**

To enable or disable hibernation

3.2.2.3 Trusted Computing



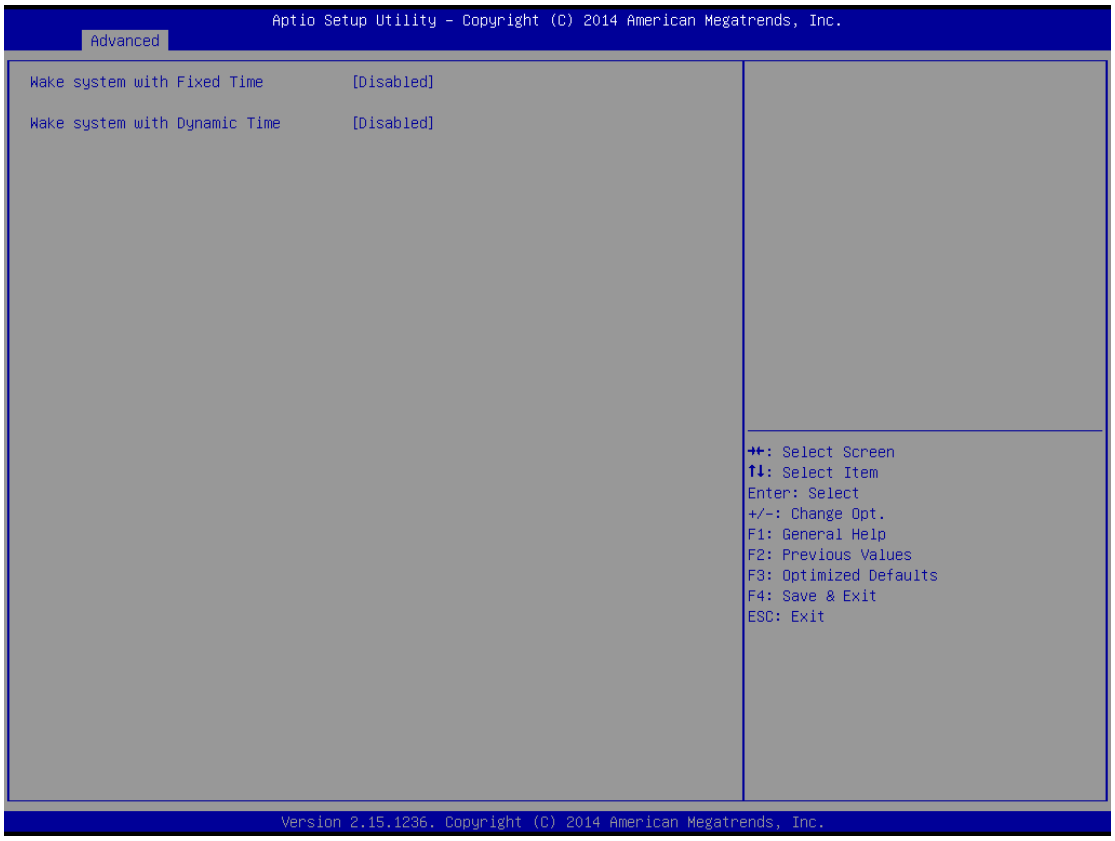
- **Security Device Support**

Enable or disable BIOS support for security device.

- **TPM State**

Enable or disable TPM state.

3.2.2.4 S5 RTC Wake Settings


Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
Advanced
Wake system with Fixed Time [Disabled]
Wake system with Dynamic Time [Disabled]
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2014 American Megatrends, Inc.

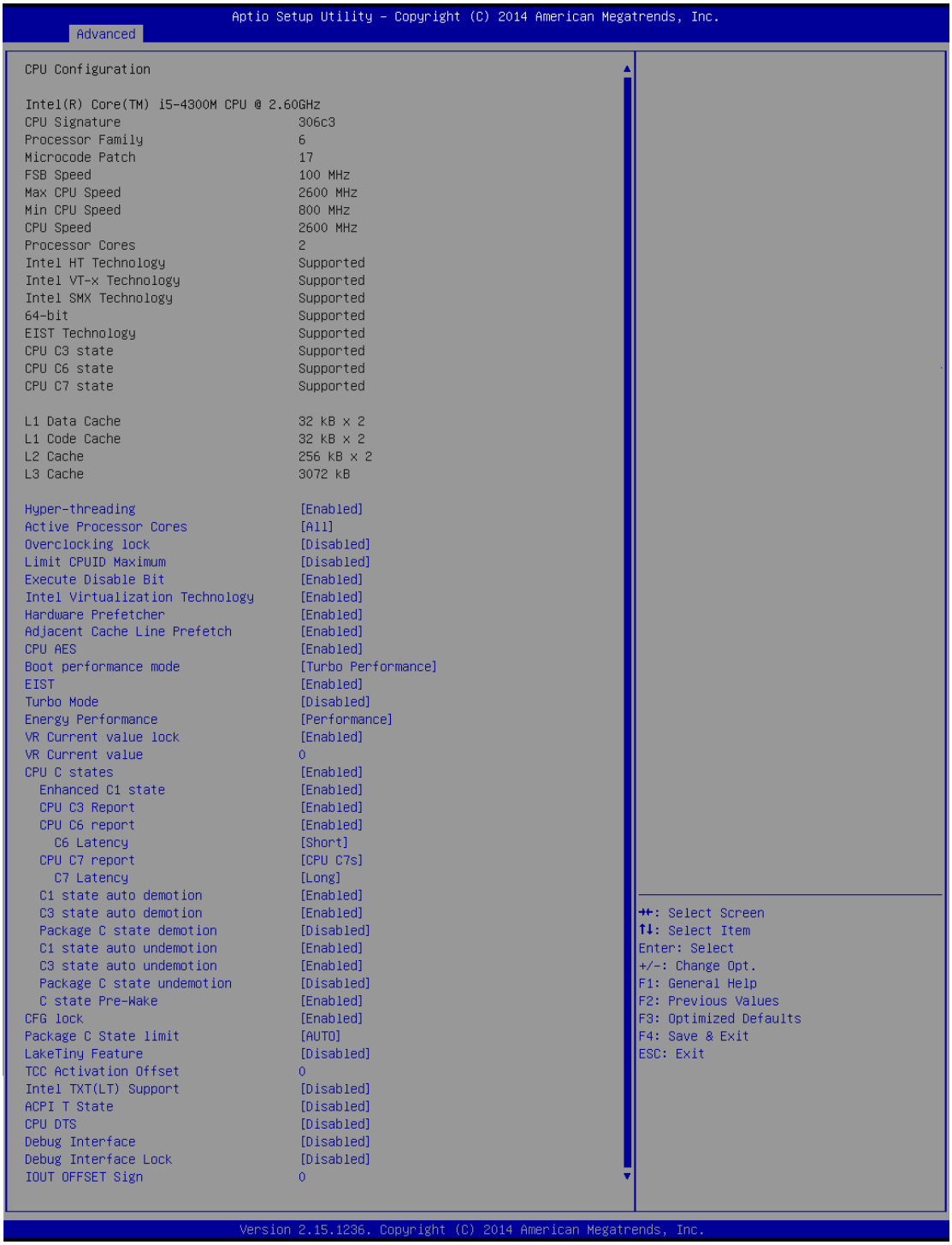
- **Wake system with Fixed Time**

System wake on alarm event..When enabled, System will wake on the hr: min: sec specified.

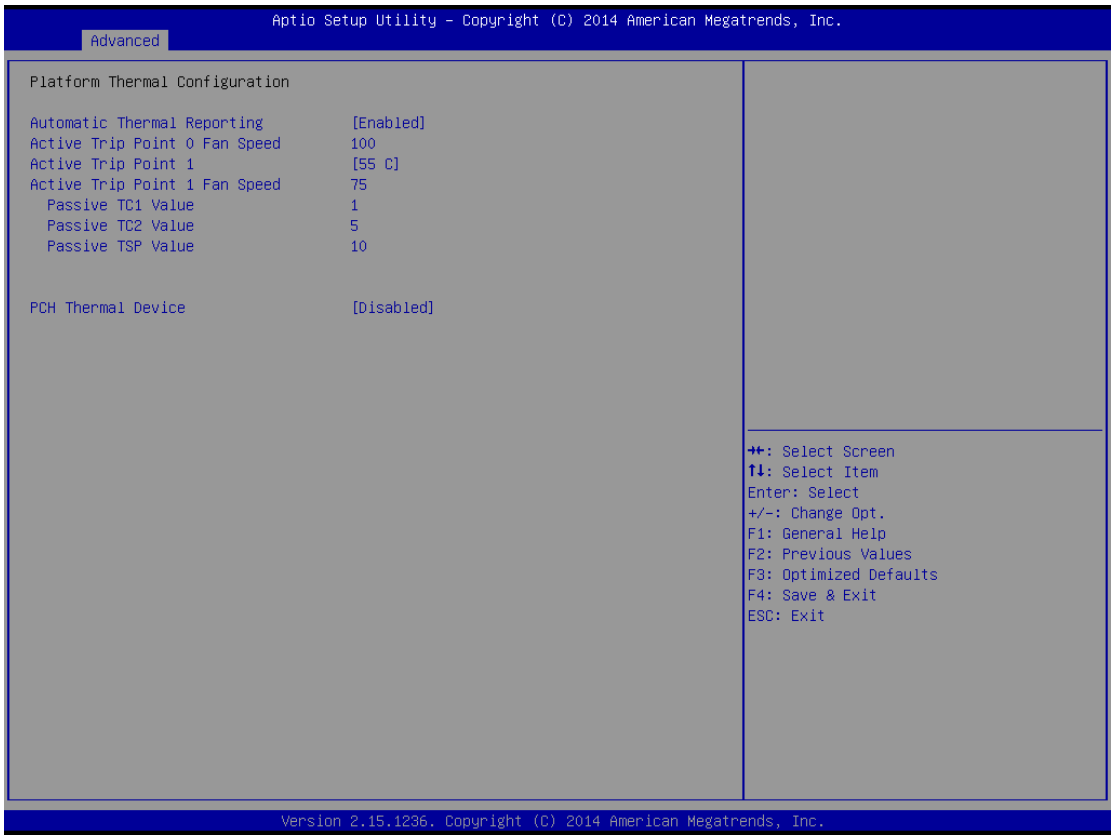
- **Wake system with Dynamic Time**

Options: Enabled, Disabled

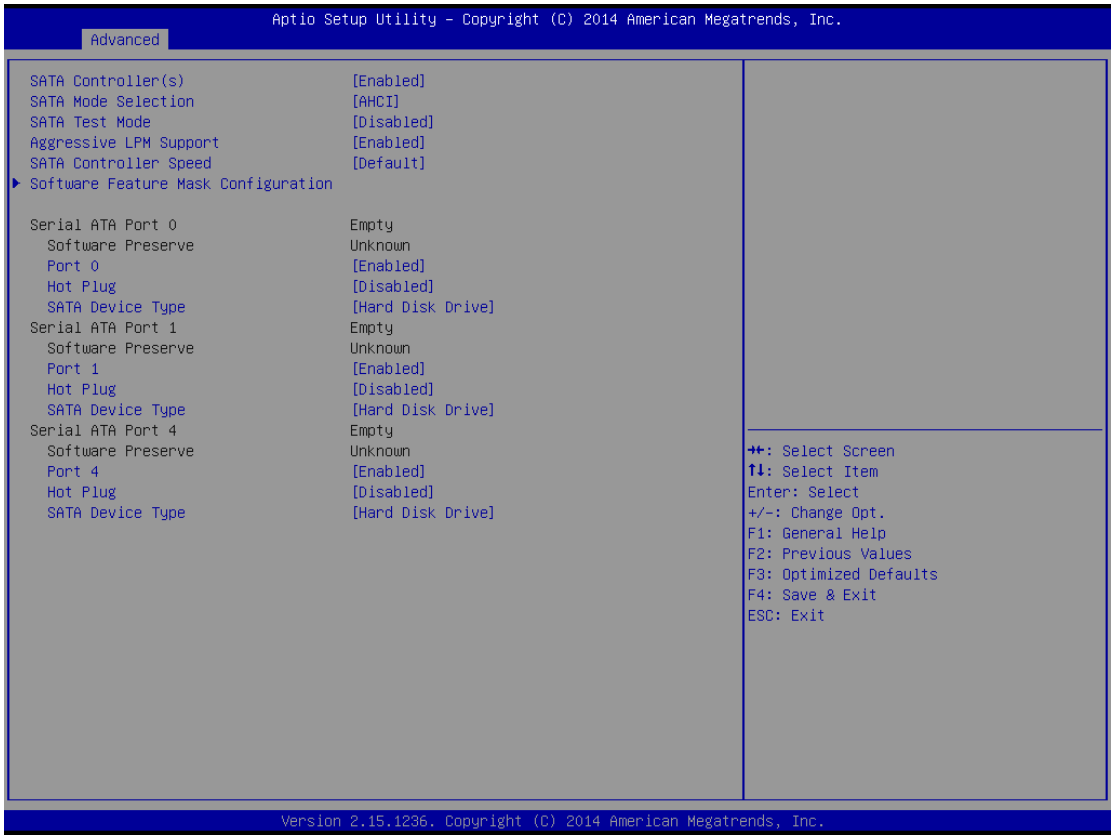
3.2.2.5 CPU Configuration



3.2.2.6 Thermal Configuration


Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
Advanced
Platform Thermal Configuration
Automatic Thermal Reporting [Enabled]
Active Trip Point 0 Fan Speed 100
Active Trip Point 1 [55 C]
Active Trip Point 1 Fan Speed 75
Passive TC1 Value 1
Passive TC2 Value 5
Passive TSP Value 10
PCH Thermal Device [Disabled]
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2014 American Megatrends, Inc.

3.2.2.7 SATA Configuration



- **SATA Controller(s)**

Allows users to enable or disable the SATA controller(s).

- **SATA Mode Selection**

Allows users to select mode of SATA controller(s).

- **Aggressive LPM Support**

Allows users to enable or disable the Aggerssive LPM Support.

- **SATA Controller Speed**

Allows users to select mode of SATA Controller Speed.

- **Serial ATA Port 0/1/4**

Allows users to enable or disable the SATA Port.

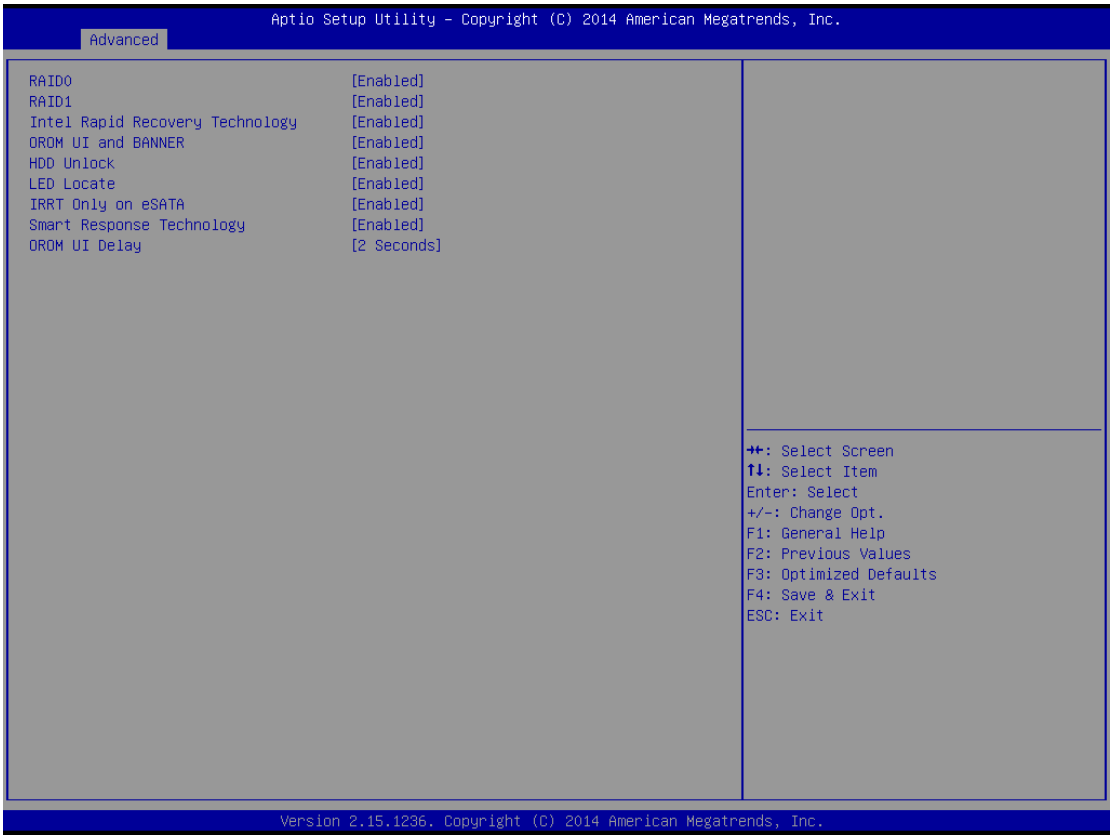
- **Hot Plug**

Allows users to enable or disable the Hot Plug.

- **SATA Device type**

Allows users to select mode of SATA Device type.

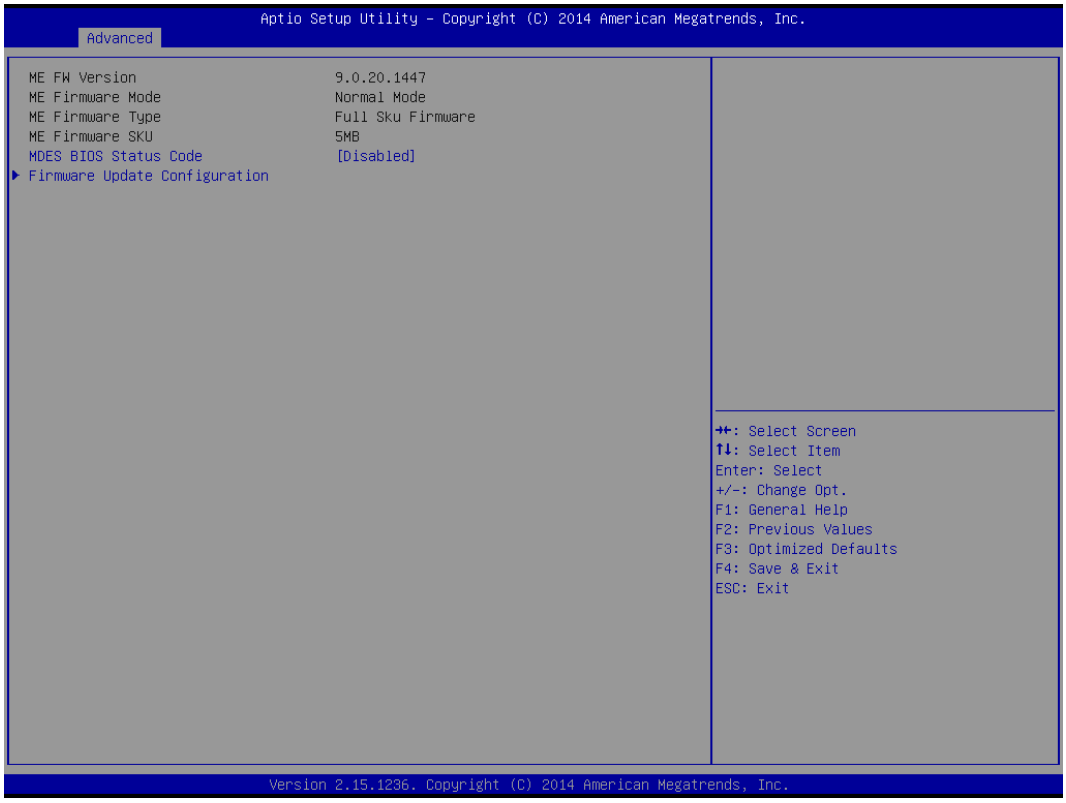
3.2.2.8 INTEL Rapid Star Technology

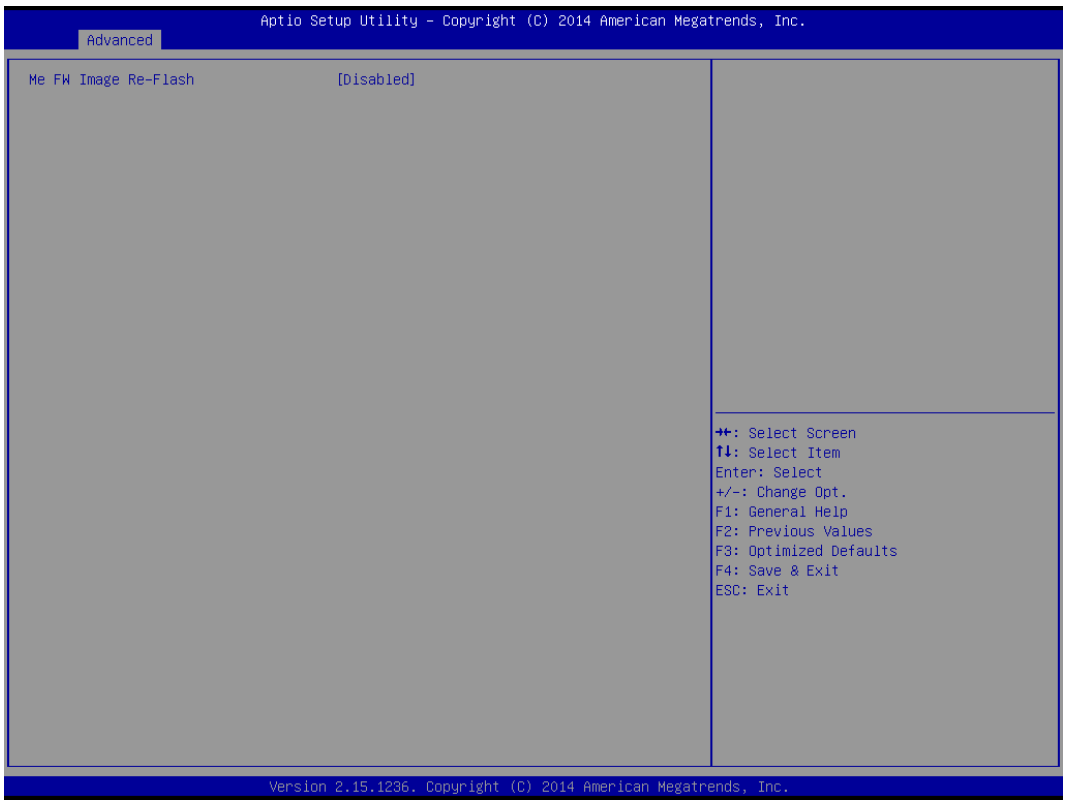


- **Intel® Rapid start technology**

Allows users to enable or disable Intel rapid start technology.

3.2.2.9 PCH(FW) Configuration

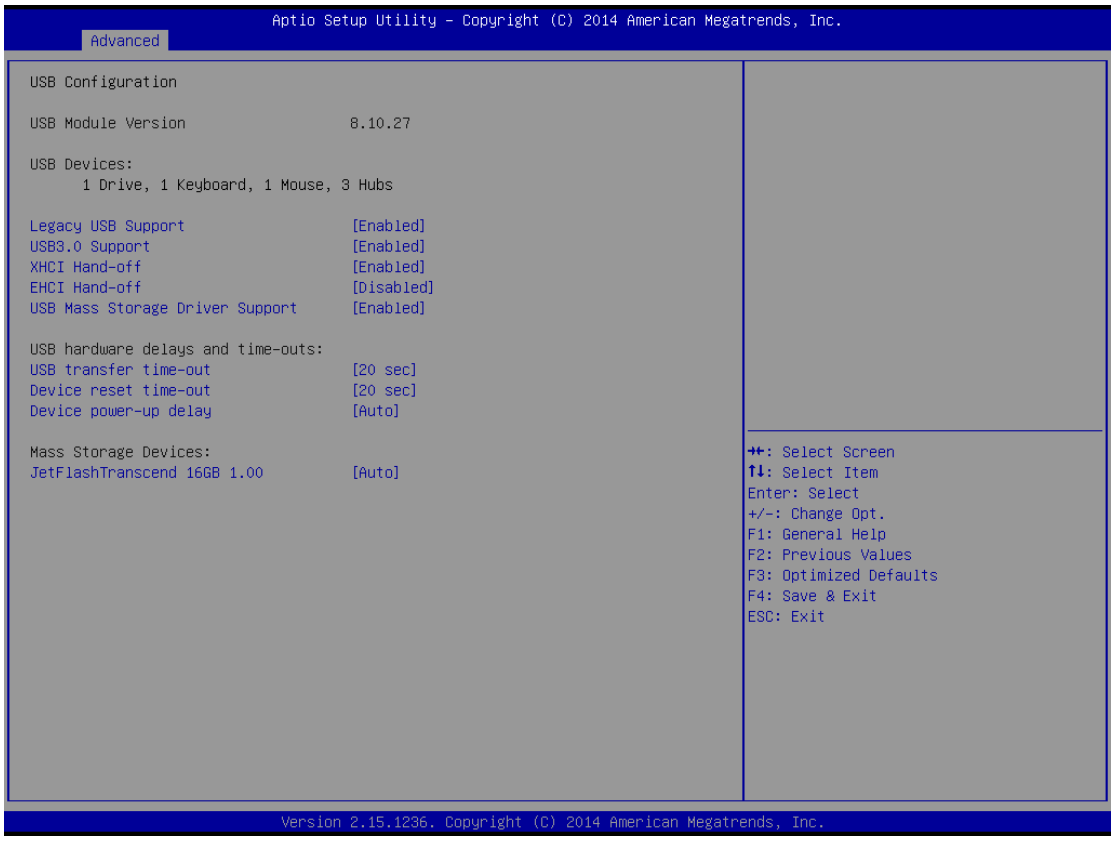

Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
Advanced
ME FW Version 9.0.20.1447
ME Firmware Mode Normal Mode
ME Firmware Type Full Sku Firmware
ME Firmware SKU 5MB
MDES BIOS Status Code [Disabled]
Firmware Update Configuration
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2014 American Megatrends, Inc.



- **Me FW Image Re-Flash**

This item allows users to enable or disable Me FW image re-flash function.

3.2.2.10 USB Configuration



- **Legacy USB support**

Enables Legacy USB support. AUTO option disable legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.

- **USB 3.0 Support**

Allows users to enable or disable USB3.0 function

- **XHCI Hand-off**

This is a workaround for OS without XHCI hand-off support. The XHCI ownership change should claim by XHCI driver.

- **ECHI Hand-off**

This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

Default: Disabled

- **USB transfer time-out**

The time-out value for control, bulk, and Interrupt transfers.

Default: 20 sec

- **Device reset time-out**

The USB mass storage device Start Unit command time-out.

Default: 20 sec

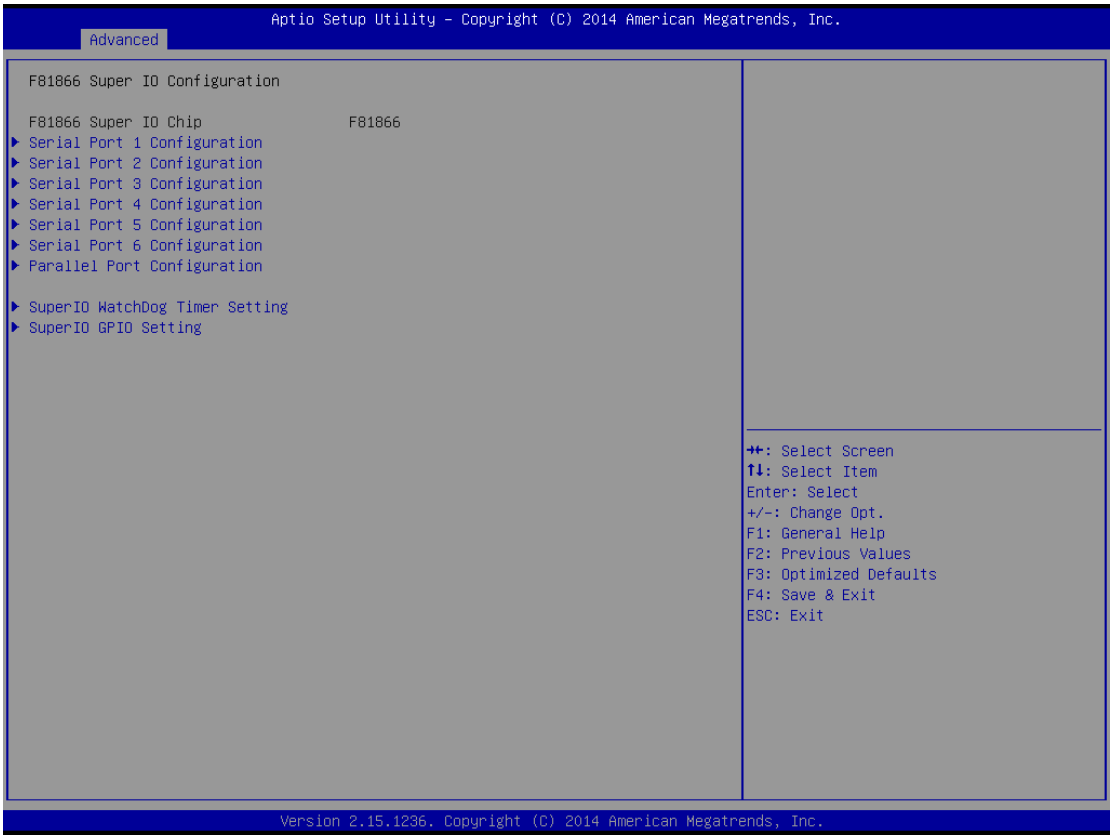
- **Device power-up delay**

Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

- **Mass Storage Device:**

Mass storage device emulation type. 'AUTO' enumerates devices less than 530MB as floppies. Forced FDD option can be used to force HDD formatted drive to boot as FDD.

3.2.2.11 Super IO configuration



- **Serial Port 1、2、3 、4、5、6 Configuration**

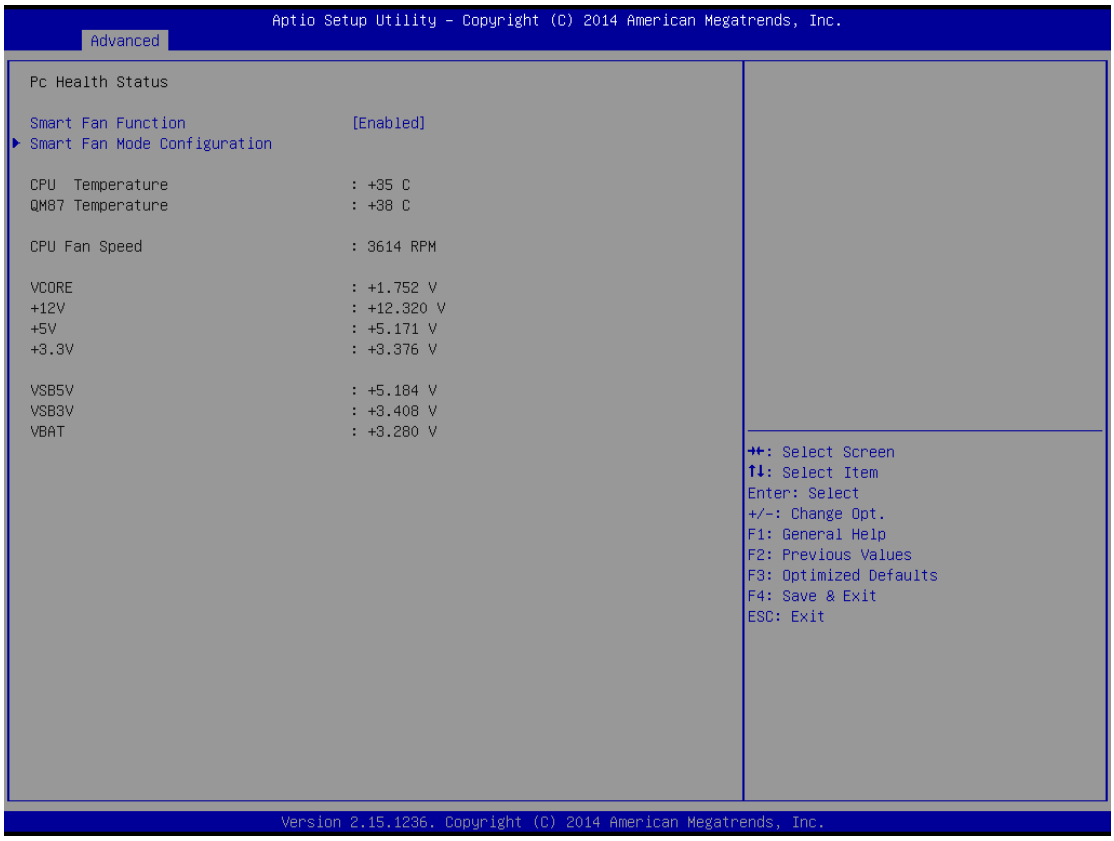
Set Parameters of Serial Ports. User can Enable/Disable the serial port and Select an optimal settings for the Super IO Device. Enable or Disable Serial Port (COM)

Default: Enable

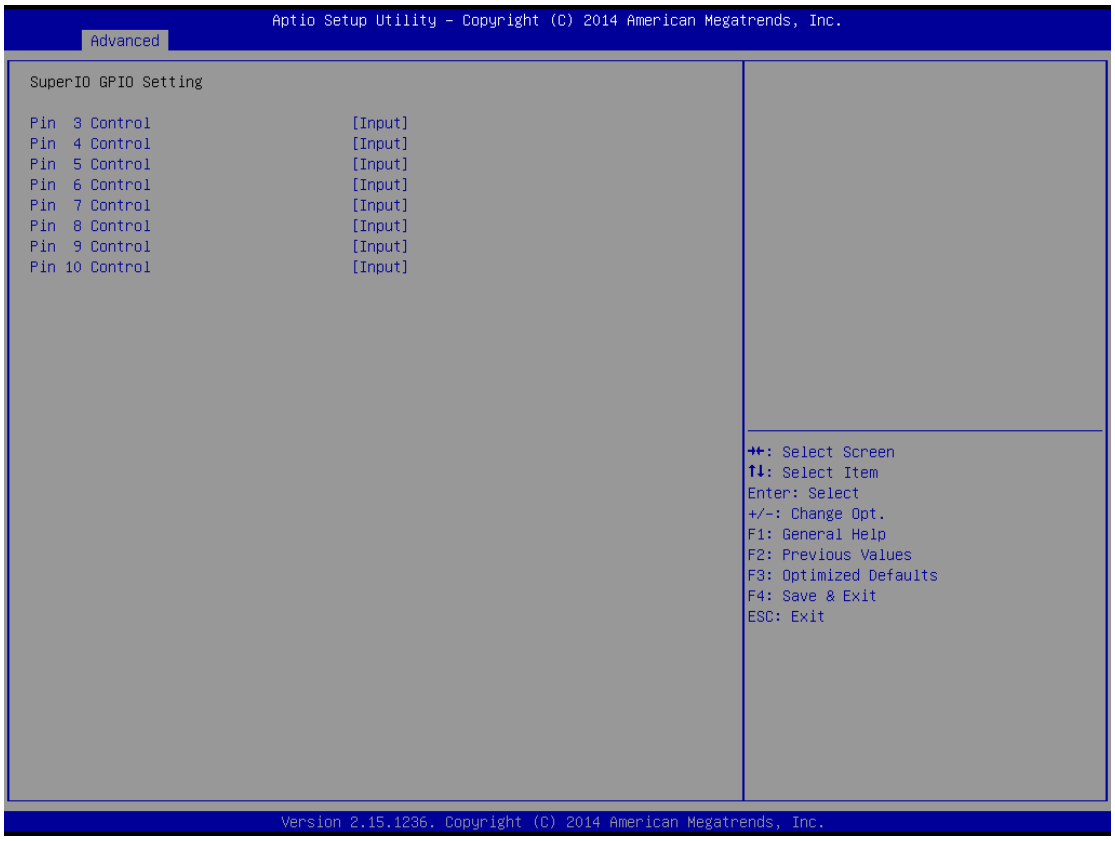
- **Super IO Watch Dog Timer Setting**

The watchdog timer circuit has to be triggered within a specified time by the application software. If the watchdog is not triggered because proper software execution fails or a hardware malfunction occurs, it will reset the system

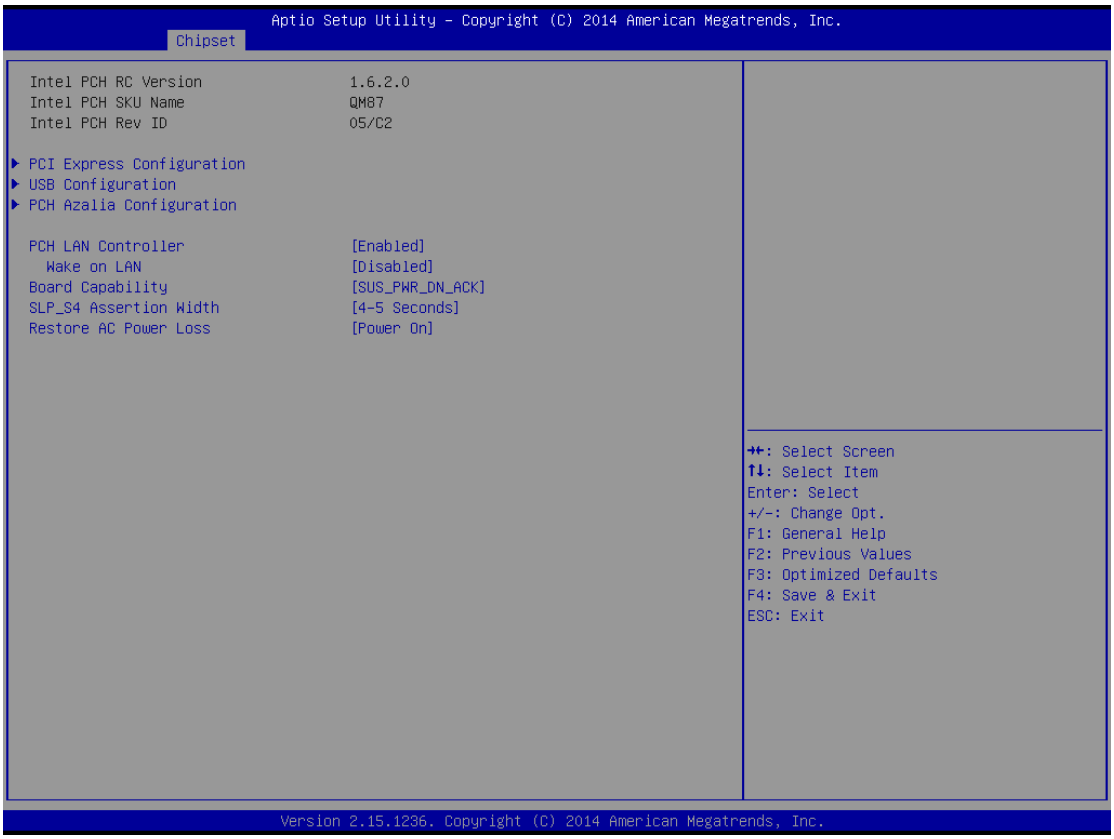
3.2.2.12 PC Health Status


Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
Advanced
Pc Health Status
Smart Fan Function [Enabled]
Smart Fan Mode Configuration
CPU Temperature : +35 C
QM87 Temperature : +38 C
CPU Fan Speed : 3614 RPM
VCORE : +1.752 V
+12V : +12.320 V
+5V : +5.171 V
+3.3V : +3.376 V
VSB5V : +5.184 V
VSB3V : +3.408 V
VBAT : +3.280 V
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2014 American Megatrends, Inc.

3.2.2.14 SuperIO GPIO Setting



3.2.3 Chipset Menu



- **PCI Express Configuration**

Detail of PCI Express items.

- **USB Configuration**

Details of USB items.

- **PCH Azalia Configuration**

Details of PCH azalia items.

- **PCH LAN controller**

Enables or disables the LAN1/2 controller.

- **Wake On LAN**

Enables or disables LAN1/2 wake up from sleep state.

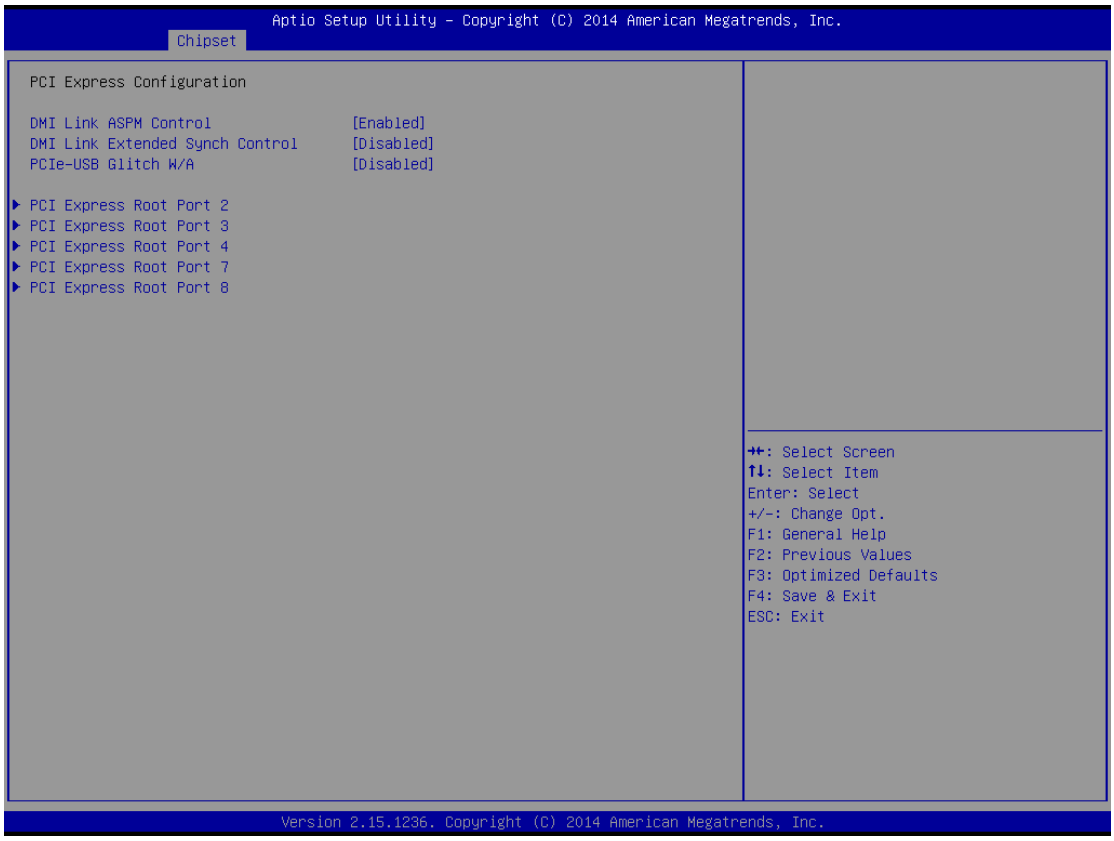
- **SLP_S4 Assertion Width**

Sets a minimum assertion width for the SLP_S4# signal.

- **Restore AC Power Loss**

This item allows users to select off, on and last state.

3.2.3.1 PCI Express Configuration


Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
Chipset
PCI Express Configuration
DMI Link ASPM Control [Enabled]
DMI Link Extended Synch Control [Disabled]
PCIe-USB Glitch W/A [Disabled]
PCI Express Root Port 2
PCI Express Root Port 3
PCI Express Root Port 4
PCI Express Root Port 7
PCI Express Root Port 8
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2014 American Megatrends, Inc.

- **DMI Link ASPM Control**

Allows users to enable or disable the DMI Link ASPM Control.

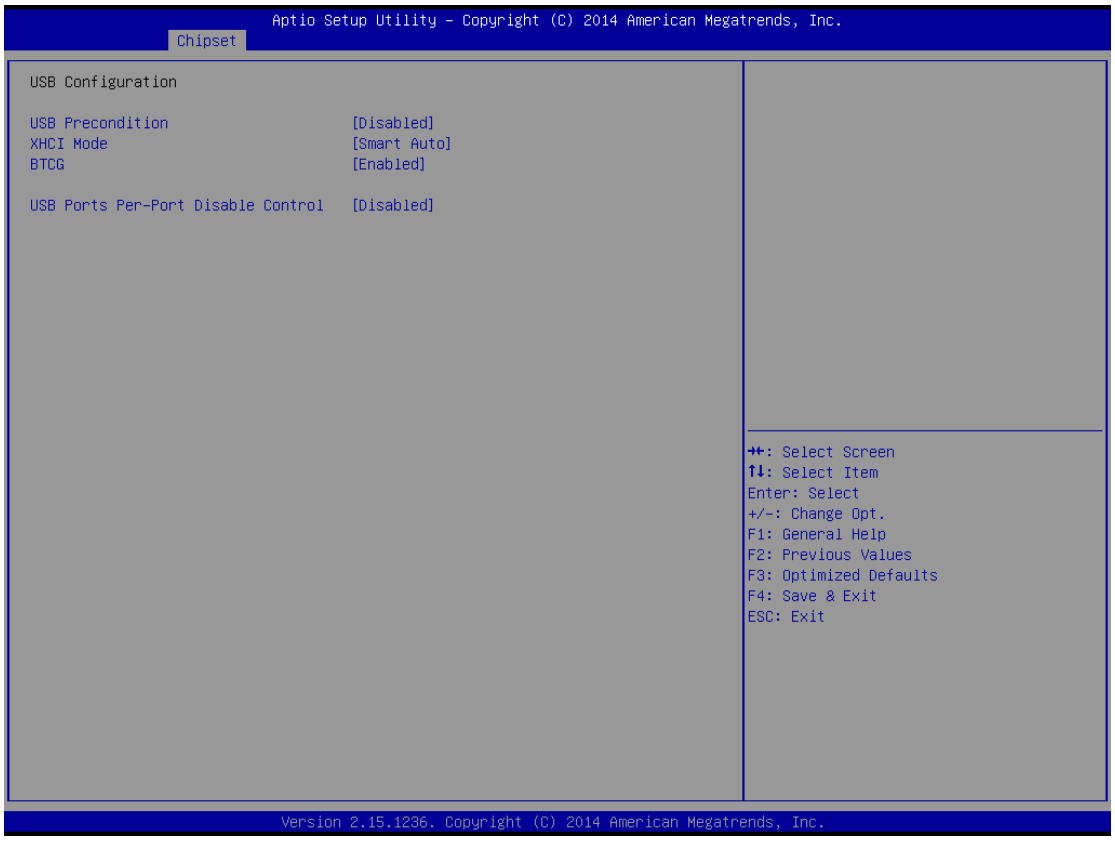
- **DMI Link Extended Synch Control**

Allows users to configure Mini PCI Express setting.

- **PCIe- USB Glitch W/A**

For bad USB devices connected behind PCIE/PEG port.

3.2.3.2 USB Configuration



- **USB Precondition**

Allows user to enable or disable USB Precondition.

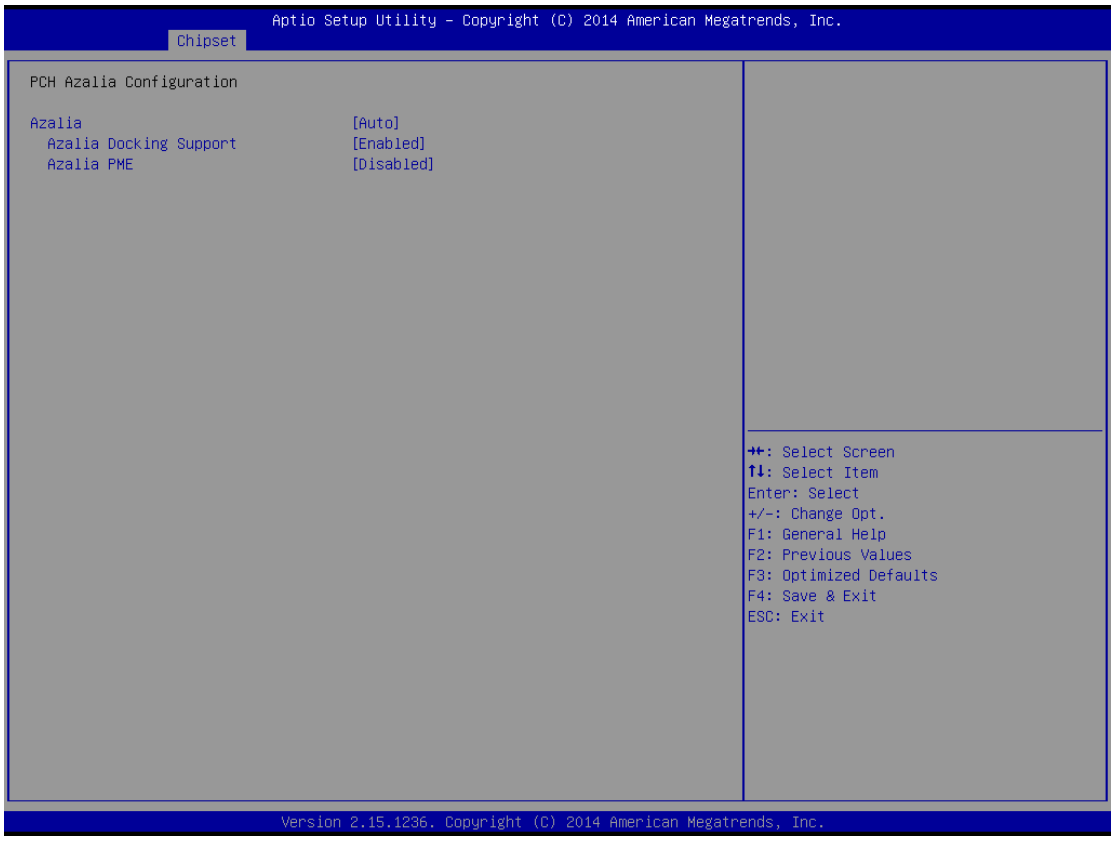
- **XHCI Mode**

Allows user to enable or disable XHCI Mode.

- **USB Ports Per-Port Disable Control**

Control each of the USB ports (0~13) disabling.

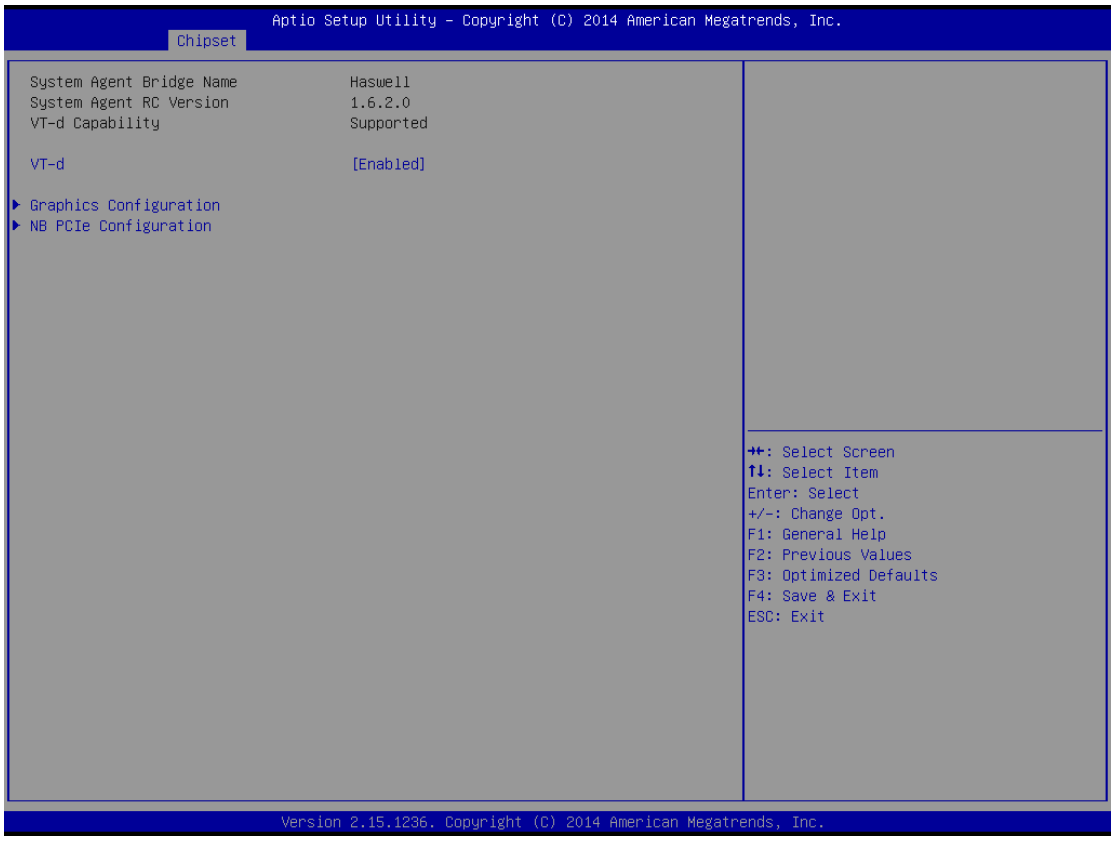
3.2.3.3 PCH Azalia Configuration



- **Azalia**

Allows user to enable or disable azalea device.

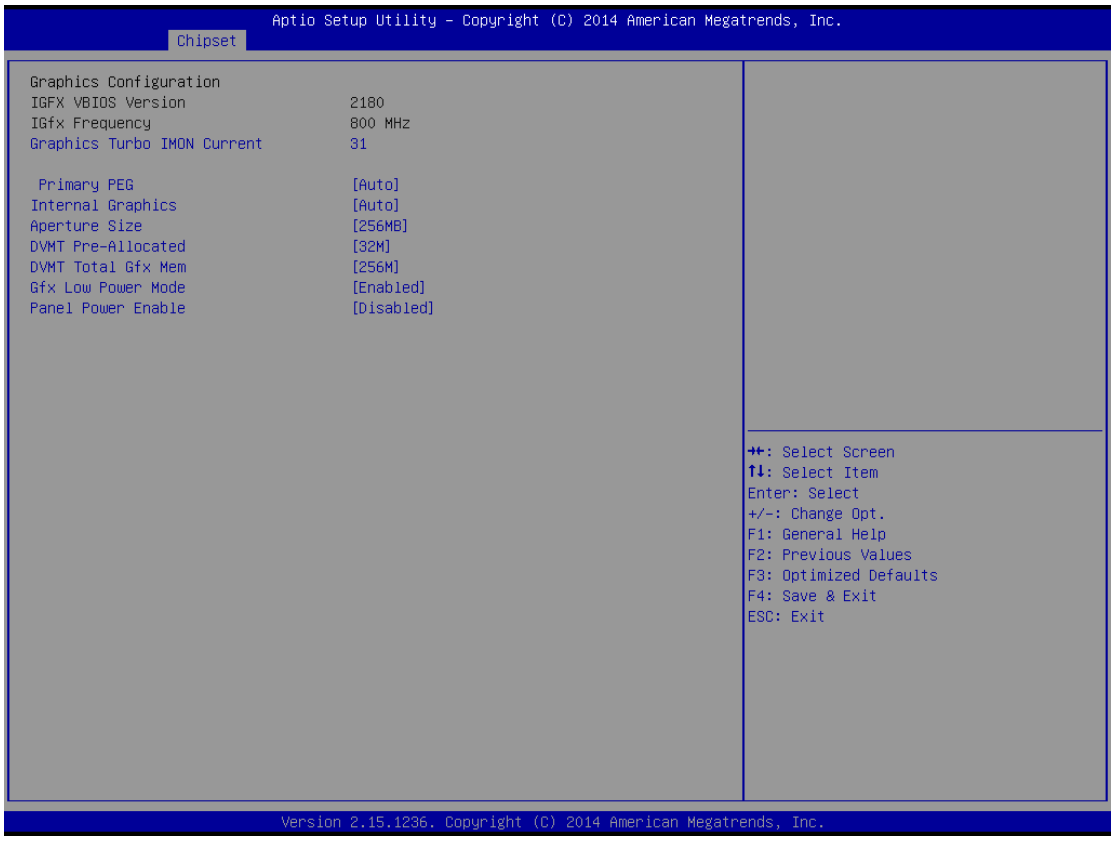
3.2.3.4 System Agent (SA) Configuration



- **VT-d**

Allows users to enable or disable VT-d.

3.2.3.5 Graphic Configuration



- **Graphics Turbo IMON Current**

Allows users to select which Graphics Turbo IMON Current.

- **Internal Graphics**

Allows users to enable or disable IGD.

- **Aperture Size**

This item allows users to select aperture size.

- **DVMT Pre-Allocated**

Allows users to select DVMT pre-allocated memory size.

- **DVMT Total Gfx Mem**

Allows users to select DVMT total memory size.

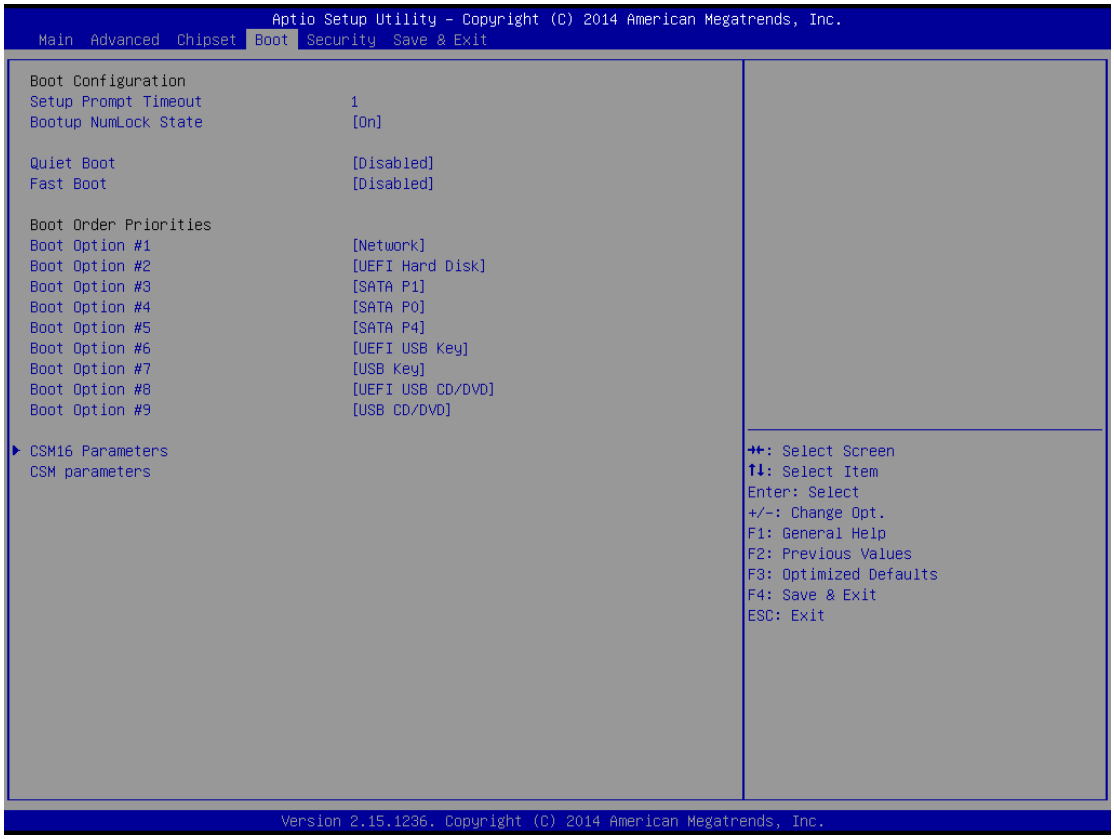
- **Gfx Low Power Mode**

Allows users to enable or disable IGD low power mode.

- **Panel Power Enable**

Allows users to enable or disable Panel Power.

3.2.4 Boot Menu


Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Setup Prompt Timeout 1
Bootup NumLock State [On]
Quiet Boot [Disabled]
Fast Boot [Disabled]
Boot Order Priorities
Boot Option #1 [Network]
Boot Option #2 [UEFI Hard Disk]
Boot Option #3 [SATA P1]
Boot Option #4 [SATA P0]
Boot Option #5 [SATA P4]
Boot Option #6 [UEFI USB Key]
Boot Option #7 [USB Key]
Boot Option #8 [UEFI USB CD/DVD]
Boot Option #9 [USB CD/DVD]
CSM16 Parameters
CSM parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2014 American Megatrends, Inc.

- **Setup Prompt Timeout**

Allows you to change number of seconds to wait for setup activation key.

- **Bootup NumLock State**

Select the Power-on state for Numlock.

- **Quiet Boot**

If this option is set to Disabled, the BIOS display normal POST messages. If Enabled, an OEM Logo is shown instead of POST messages.

- **FAST Boot**

Allows users to enable or disable Fast Boot.

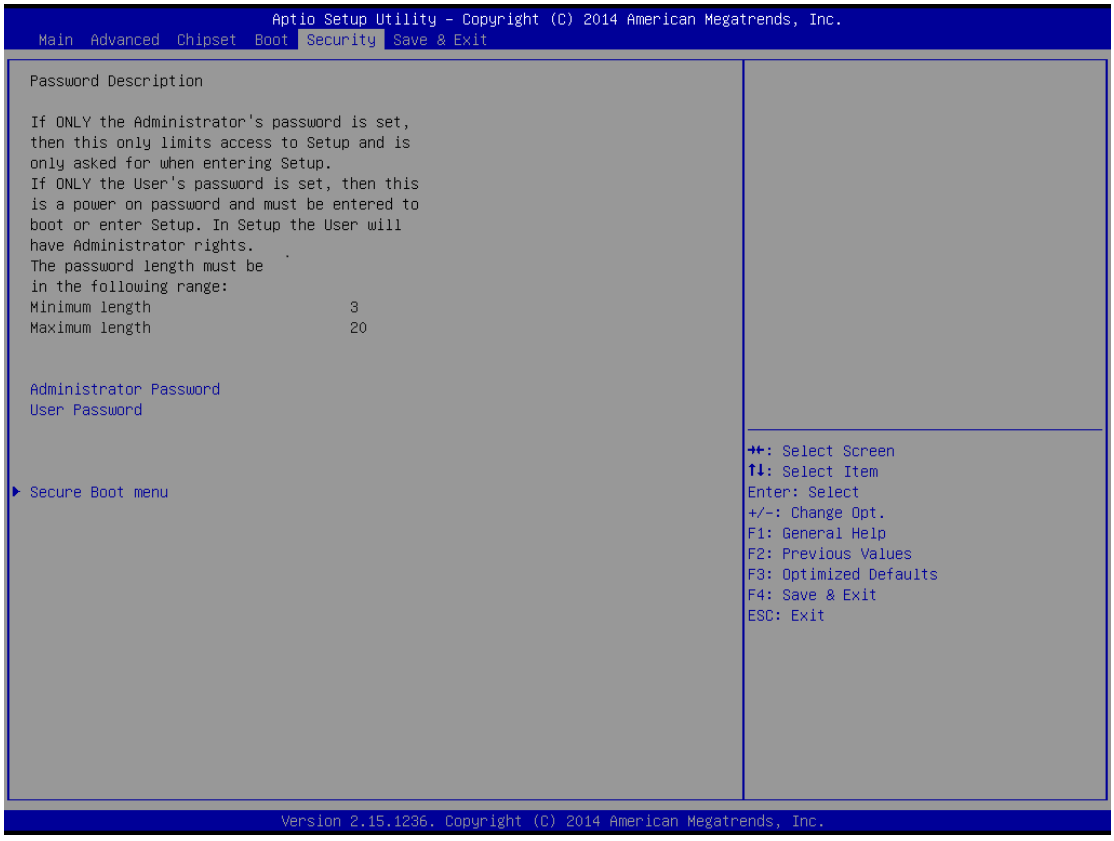
- **Boot Order Priorities**

Set the system boot order.

- **CSM parameters**

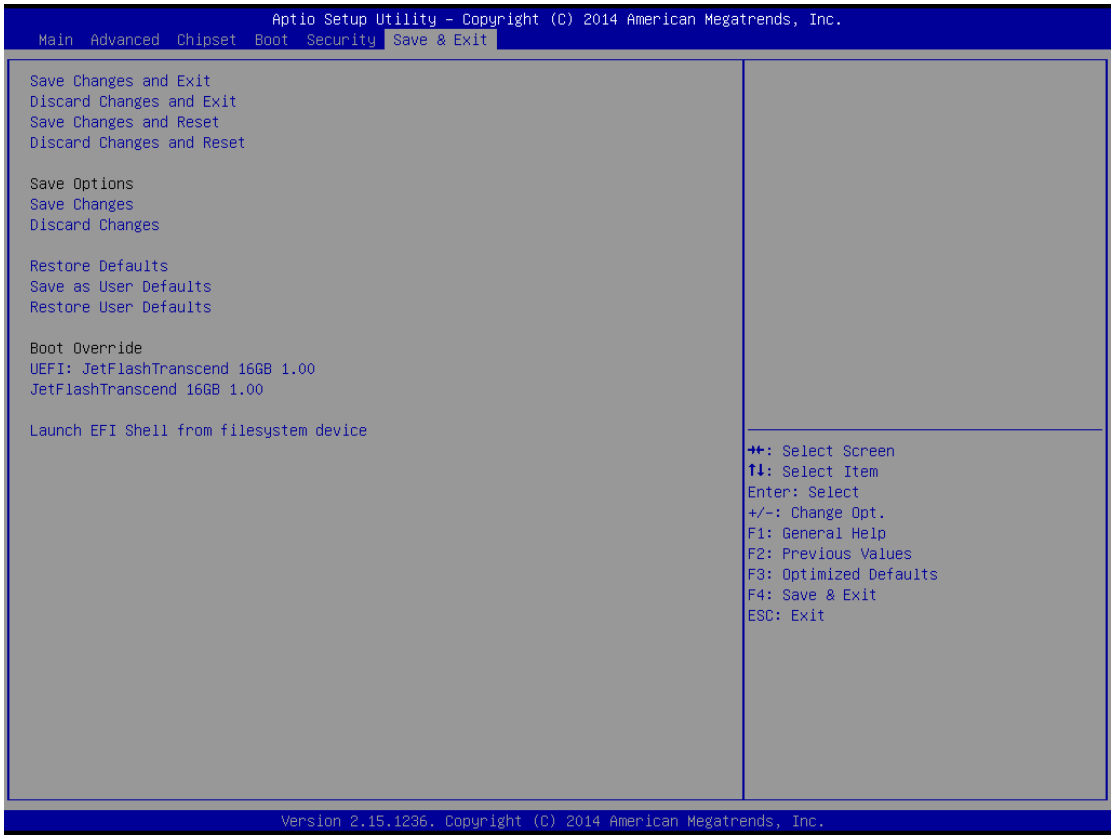
This section allows you to configure the boot settings.

3.2.5 Security Menu


Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Password Description
If ONLY the Administrator's password is set,
then this only limits access to Setup and is
only asked for when entering Setup.
If ONLY the User's password is set, then this
is a power on password and must be entered to
boot or enter Setup. In Setup the User will
have Administrator rights.
The password length must be
in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
Secure Boot menu
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2014 American Megatrends, Inc.

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

3.2.6 Save & Exit



- **Save Changes and Exit**

Allows you to exit system setup after saving changes.

- **Discard Changes and Exit**

Allows you to exit system setup without saving any changes.

- **Save Changes and Reset**

Allows you to reset the system after saving the changes.

- **Discard Changes and Reset**

Allows you to rest system setup without saving any changes.

- **Save Changes**

Allows you to save changes done so far to any of the options.

- **Discard Changes**

Allows you to discard changes done so far to any of the options.

- **Restore Defaults**

Allows you to restore/load default values for all the options.

- **Save as User Defaults**

Allows you to save the changes done so far as user defaults.

- **Restore User Defaults**

Allows you to restore the user defaults to all the options.

- **Boot Override**

Boot device selection can override your boot priority.

3.3 Using Recovery Wizard to Restore Computer

IH70 computer has a dedicate recovery partition stored on the hard drive of the PC to enable quick one-key recovery process. This partition occupies about 11GB of the storage space, and comes built-in to each IH70 series PC.

Warning: Before starting the recovery process, be sure to backup all user data, as all data will be lost after the recovery process.

Follow the procedure below to enable quick one-key recovery procedure:

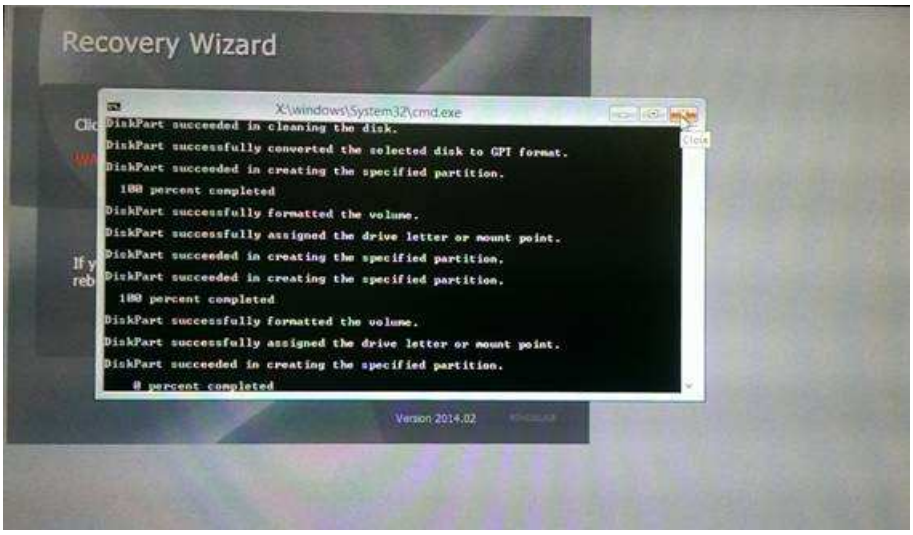
- Plug-in the AC adapter to Bay Trail series computer. Make sure the computer stays plugged in to power source during the recovery process.
- Turn on the computer, and when the boot screen shows up, press the **F6** to initiate the Recovery Wizard.
- The following screen shows the Recovery Wizard. Click on “Recovery” button to continue.

Recovery Wizard
Click " Recovery " to restore your system.
WARNING!
The process will clear all of your data.
If you do not want to restore your system please press " Quit " to reboot.
Recovery
Quit

A warning message about data loss will show up. Make sure data is backed up before recovery, and click on “Yes” to continue.

Recovery your systems
Are you sure you want to recovery your system?
The action will delete all of your data on your disk.
是(Y)
否(N)

Wait till the recovery process to complete. During the recovery process, a command prompt will show up to indicate the percent of recovery process. After recovery is completed, and the tablet computer will restart automatically.


Recovery Wizard
X:\windows\System32\cmd.exe
DiskPart succeeded in cleaning the disk.
DiskPart successfully converted the selected disk to GPT format.
DiskPart succeeded in creating the specified partition.
100 percent completed
DiskPart successfully formatted the volume.
DiskPart successfully assigned the drive letter or mount point.
DiskPart succeeded in creating the specified partition.
DiskPart succeeded in creating the specified partition.
100 percent completed
DiskPart successfully formatted the volume.
DiskPart successfully assigned the drive letter or mount point.
DiskPart succeeded in creating the specified partition.
0 percent completed
Version 2014.02

CHAPTER 4

Graphic Driver Installation

This chapter offers information on the chipset software Installation utility
Sections include:

- Installation of Graphic Driver
- Panel Resolution Setting

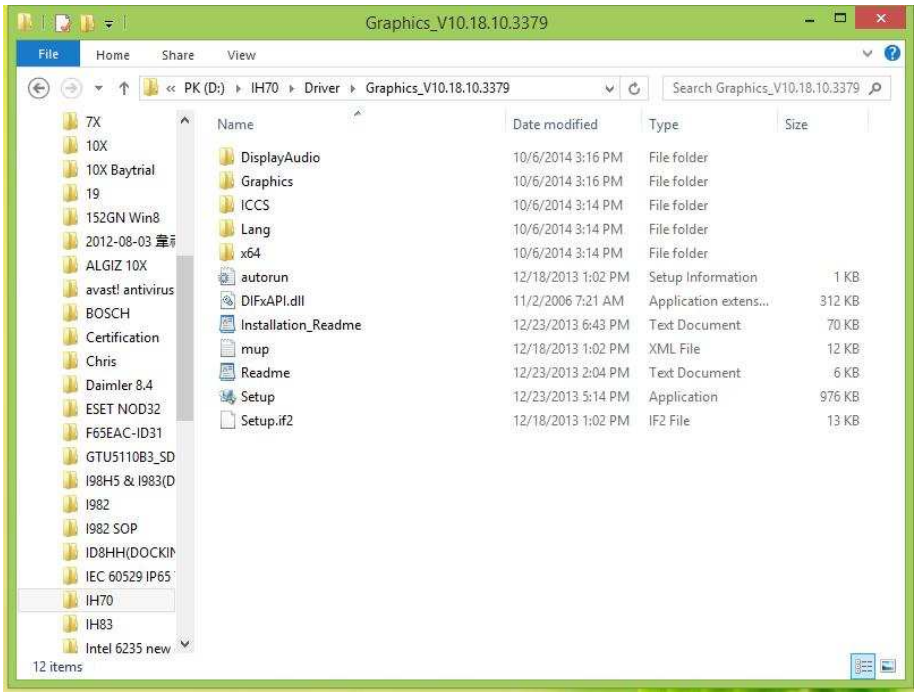
Chapter 4 Graphic Driver Installation

4.1 Instruction

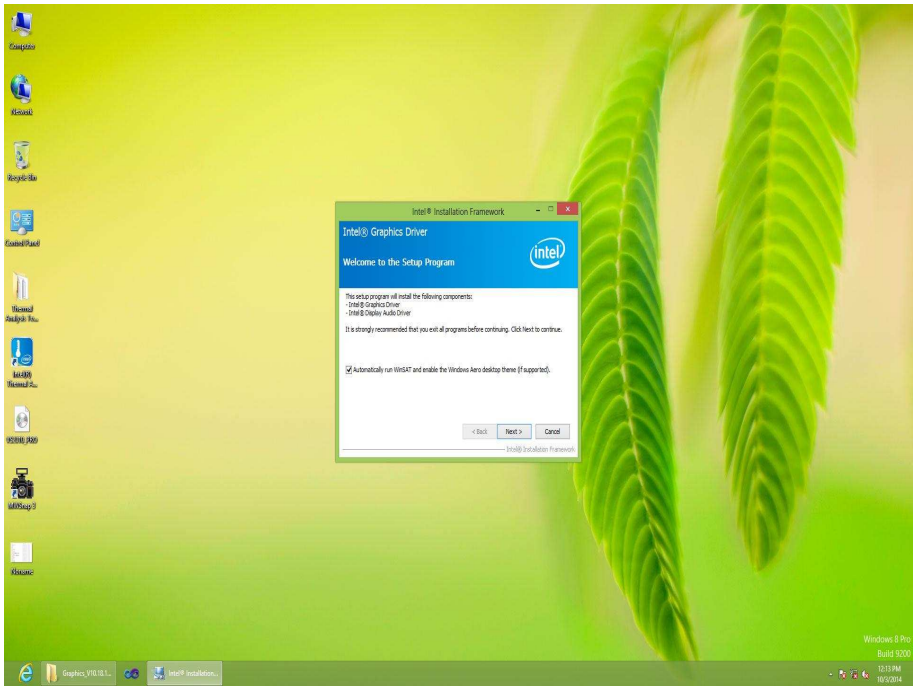
IH70 Motherboard is with Intel mobile Core i7, Core i5, Core i3 dual core CPU and with an integrated graphics controller. You need to install the Graphic driver to enable the function.

Intel Graphic supports versatile display options and 32-bit 3D graphics engine. Triple independent display, enhanced display modes for widescreen flat panels for extend, twin, and clone display mode.

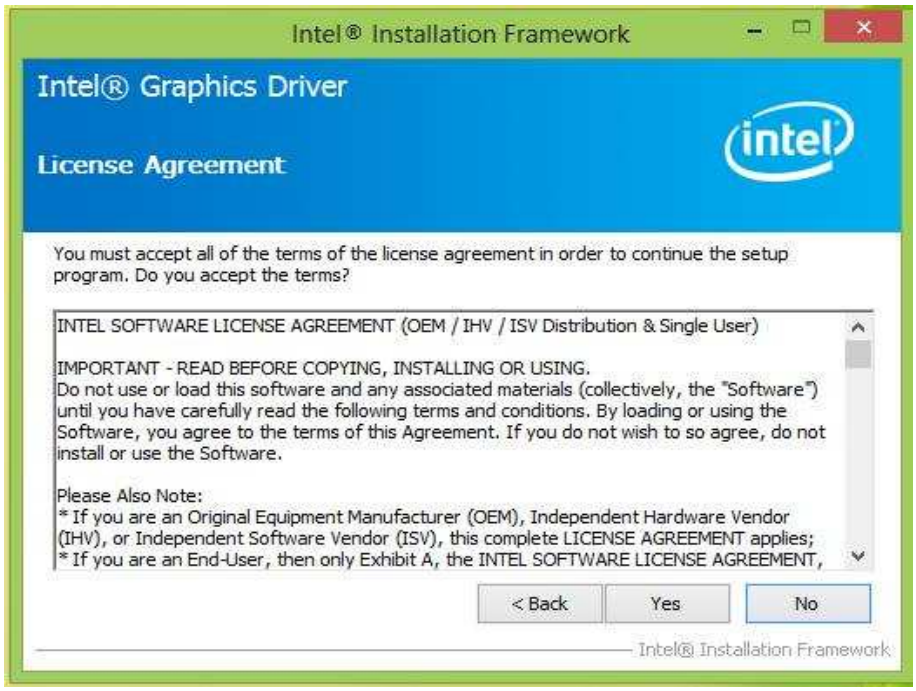
Step.1. Insert the driver CD into your system's CD-ROM drive. You can see the driver folders items. Navigate to the “Graphic Driver“ folder and click "setup.exe" to complete the installation.



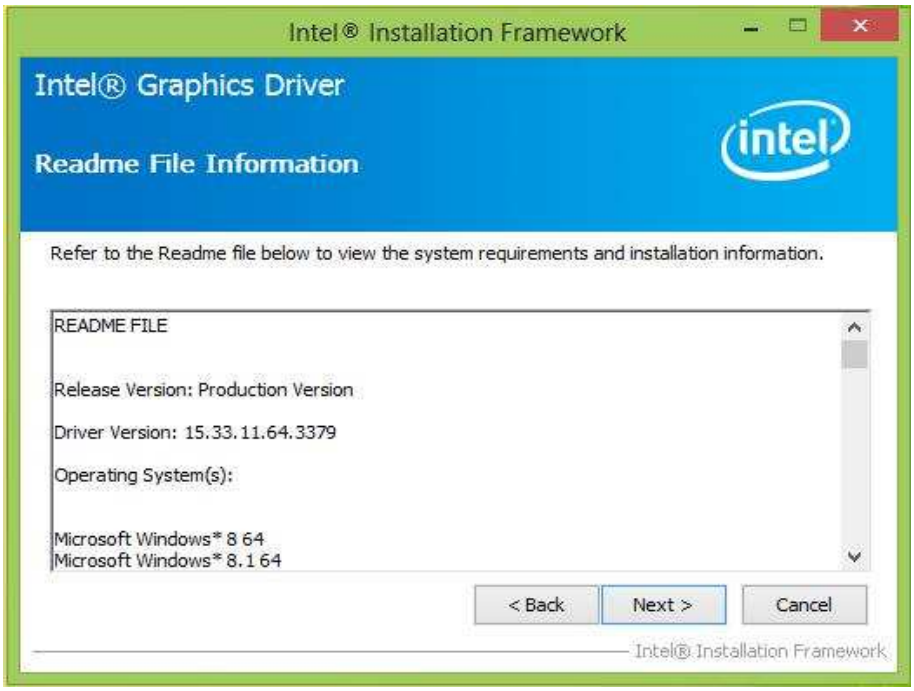
Step.2. Click on “Next “ to install Driver.



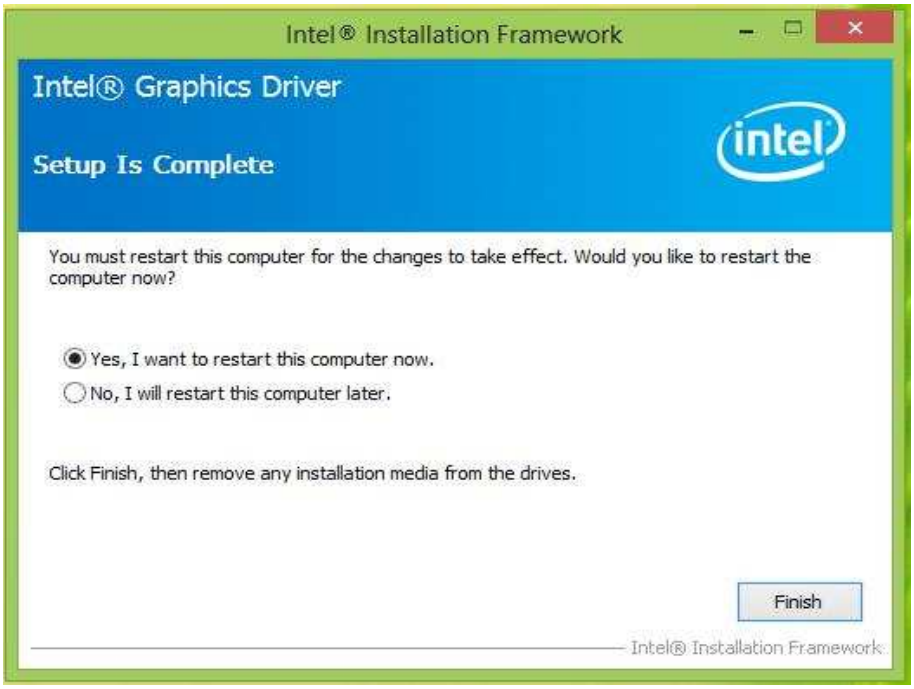
Step.3. Click on “Yes “ to agree License.


Intel® Installation Framework
Intel® Graphics Driver
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

Step.4. Click on “Next “ to install Driver.



Step.5. Click on “Yes, I want to restart this computer now“ to go on.


Intel® Installation Framework
Intel® Graphics Driver
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

CHAPTER 5

Chipset Driver Installation

This chapter offers information on the chipset software Installation utility

- Installation of Chipset Driver
- Further information

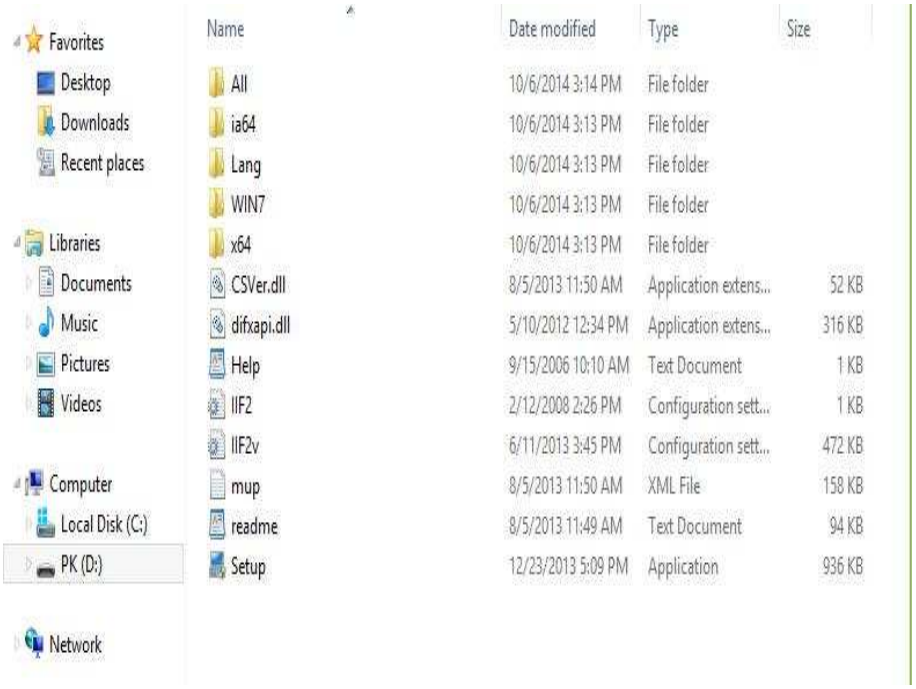
Chapter 5 Chipset Driver Installation

5.1 Instruction

The Intel Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel chipset components. Follow the instructions below to complete the installation.

Setp.1. Insert the CD that comes with the motherboard. Open the file document “Chipset Driver” and click on “Setup.exe“ to install driver.

.



Setp.2. Click on “Next“ to install driver.

Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
intel
Refer to the Readme file below to view the system requirements and installation information.
Press the Page Down key to view the rest of the file.
****
* Product: Intel(R) Chipset Device Software
* Release: Production Version
* Version: 9.4.0.1026
* Target PCH/Chipset: Xeon(R) processor E3-1200 v3,Inte
* Intel(R) 8 Series,C220 Series
* Date: August 05 2013
****
< Back
Next >
Cancel
Intel® Installation Framework

Setp.3. Click on “Next“ to install driver.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
intel
Please wait while the following setup operations are performed:
Installing Driver: Intel(R) 8 Series SATA AHCI Controller - 9C03
Version: 9.4.0.1023
Installing Driver: Intel(R) 8 Series PCI Express Root Port #1 - 9C10
Version: 9.4.0.1023
Installing Driver: Intel(R) 8 Series LPC Controller (Premium SKU) - 9C43
Version: 9.4.0.1023
Installing Driver: Intel(R) 8 Series SMBus Controller - 9C22
Version: 9.4.0.1023
Installing Driver: Intel(R) 8 Series USB Enhanced Host Controller #1 - 9C26
Version: 9.4.0.1025
Click Next to continue.
Next
Intel® Installation Framework

Step.7. Click on “Yes, I want to restart this computer now“ to go on.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
intel
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

CHAPTER 6

Ethernet Driver Installation

This chapter offers information on the Ethernet software installation utility.
Sections include:

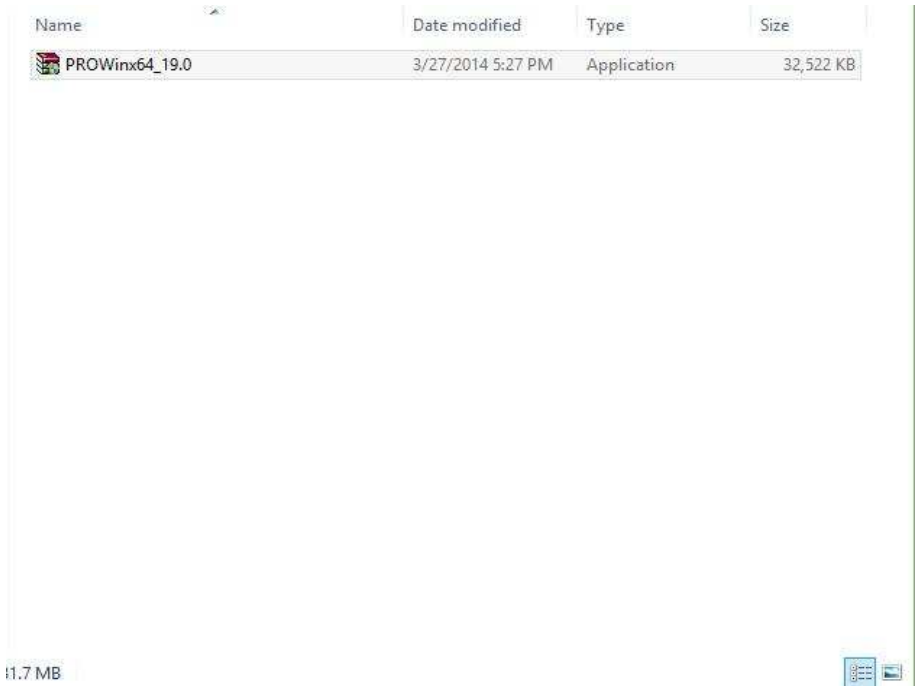
- Introduction
- Installation of Ethernet Driver

Chapter 6 Ethernet Driver Installation

6.1 Instruction

The Users must make sure which operating system you are using in the IH70 Motherboard before installing the Ethernet drivers. Follow the steps below to complete the installation of the Intel® I210IT Gigabit-LAN Controller + I218LM Gigabit-LAN drivers. You will quickly complete the installation.

Step.1. Insert the driver CD and select the “LAN Driver” folder.



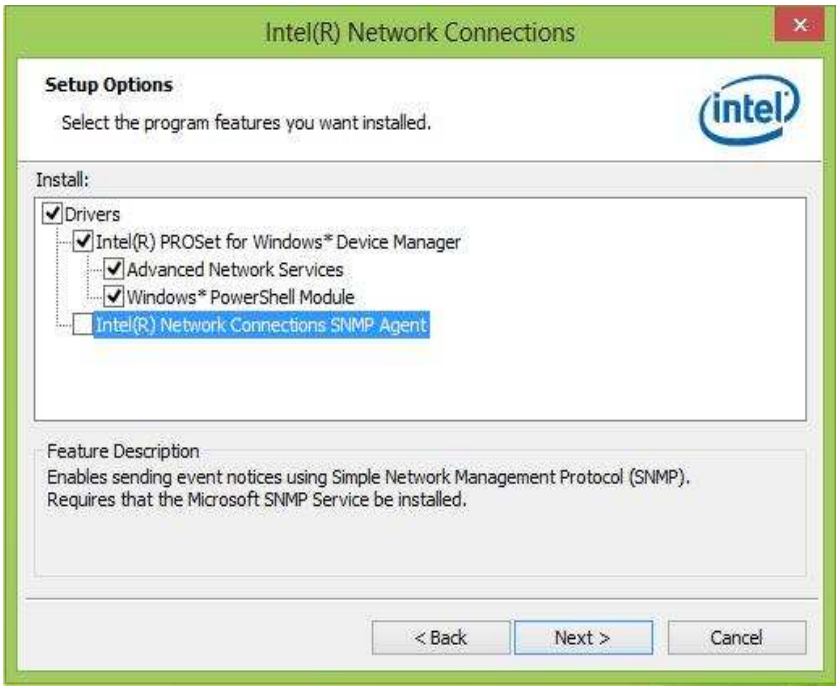
Step.2. Extract the “PROWinX64_19.0 ” file and click on next to install the driver.

Intel(R) Network Connections Install Wizard
Welcome to the install wizard for Intel(R) Network Connections
intel
Installs drivers, Intel(R) Network Connections, and Advanced Networking Services.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

Step.3 Click on “Next “ to agree License.

Intel(R) Network Connections Install Wizard
License Agreement
Please read the following license agreement carefully.
intel
INTEL SOFTWARE LICENSE AGREEMENT
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not copy, install, or use this software and any associated materials (collectively, the "Software") provided under this license agreement ("Agreement") until you have carefully read the following terms and conditions.
By copying, installing, or otherwise using the Software, you agree to be bound by the terms of this Agreement. If you do not agree to the terms of this Agreement,
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
< Back
Next >
Cancel

Step.4. Click on “Next“ to install driver.


Intel(R) Network Connections
Setup Options
Select the program features you want installed.
Install:
Drivers
Intel(R) PROSet for Windows* Device Manager
Advanced Network Services
Windows* PowerShell Module
Intel(R) Network Connections SNMP Agent
Feature Description
Enables sending event notices using Simple Network Management Protocol (SNMP).
Requires that the Microsoft SNMP Service be installed.
< Back
Next >
Cancel

Step.5. Click on “Finish“ to complete the driver installation.

Intel(R) Network Connections Install Wizard
Install wizard Completed
To access new features, open Device Manager, and view the properties of the network adapters.
< Back
Finish
Cancel

CHAPTER 7

Audio Driver Installation

This chapter offers information on the Audio software installation utility.
Sections include:

- Introduction
- Installation of Audio Driver

Chapter 7 Audio Driver Installation

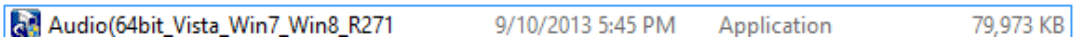
7.1 Introduction

The ALC886 series are high-performance 7.1+2 Channel High Definition Audio Codecs providing ten DAC channels that simultaneously support 7.1 sound playback, plus 2 channels of independent stereo sound output (multiple streaming) through the front panel stereo outputs. The series integrates two stereo ADCs that can support a stereo microphone, and feature Acoustic Echo Cancellation (AEC), Beam Forming (BF), and Noise Suppression (NS) technology.

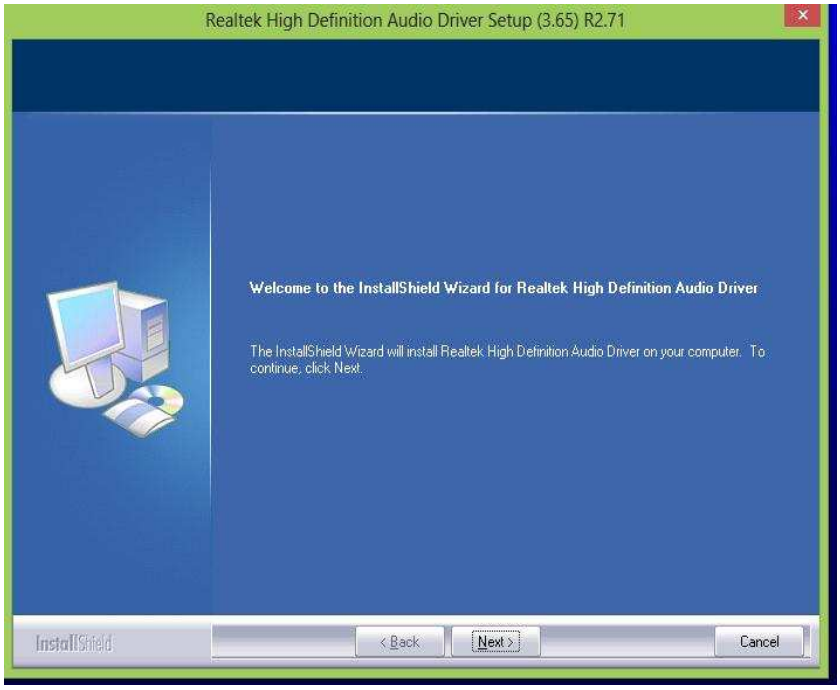
7.2 Installation of Audio Driver

The users must make sure which operating system you are using in the IH70 Motherboard before installing the Audio drivers. Follow the steps below to complete the installation of the Realtek ALC886 Audio drivers. You will quickly complete the installation.

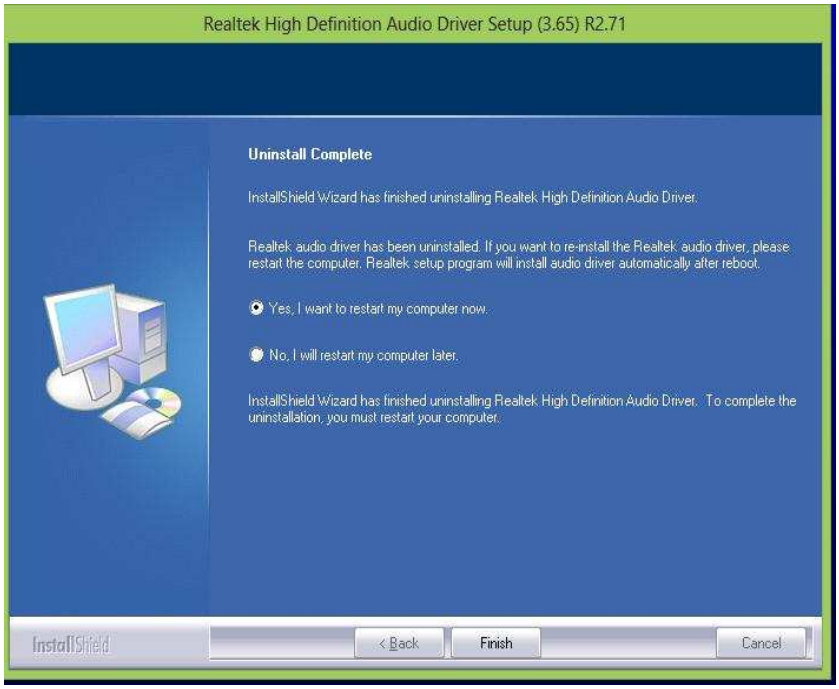
Step.1. Insert the CD that comes with the motherboard. Open the folder “Audio Driver” and click on “Audio(64bit_Vista_Win7_Win8_R271 to execute the setup.



Step.2. Click on “Next“ to install driver.


Realtek High Definition Audio Driver Setup (3.65) R2.71
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

Step.3. Click on “Yes, I want to restart my computer now” to finish installation.


Realtek High Definition Audio Driver Setup (3.65) R2.71
Uninstall Complete
InstallShield Wizard has finished uninstalling Realtek High Definition Audio Driver.
Realtek audio driver has been uninstalled. If you want to re-install the Realtek audio driver, please restart the computer. Realtek setup program will install audio driver automatically after reboot.
Yes, I want to restart my computer now.
No, I will restart my computer later.
InstallShield Wizard has finished uninstalling Realtek High Definition Audio Driver. To complete the uninstallation, you must restart your computer.
InstallShield
< Back
Finish
Cancel

CHAPTER 8

Fintek COM Port Driver Installation

This chapter describes the step by step method to install the Fintek COM port driver.

Chapter 8 Fintek COM Port Driver Installation

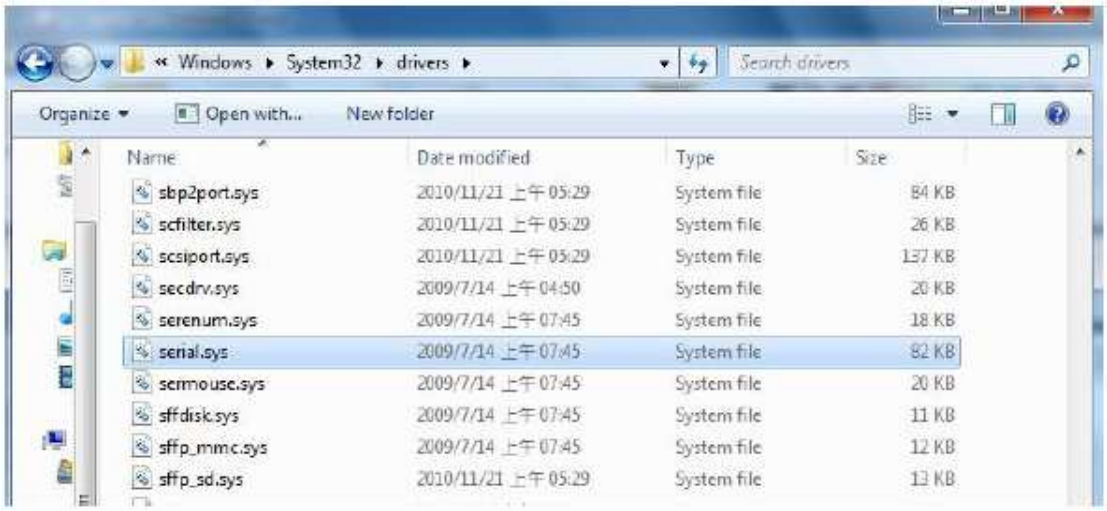
STEP 1.If the system is WIN7 please first do close UAC.(Refer following “Disabling User Account
Control (UAC) in Windows 7”)

STEP 2.Extract the Patch_0408.zip to a folder.

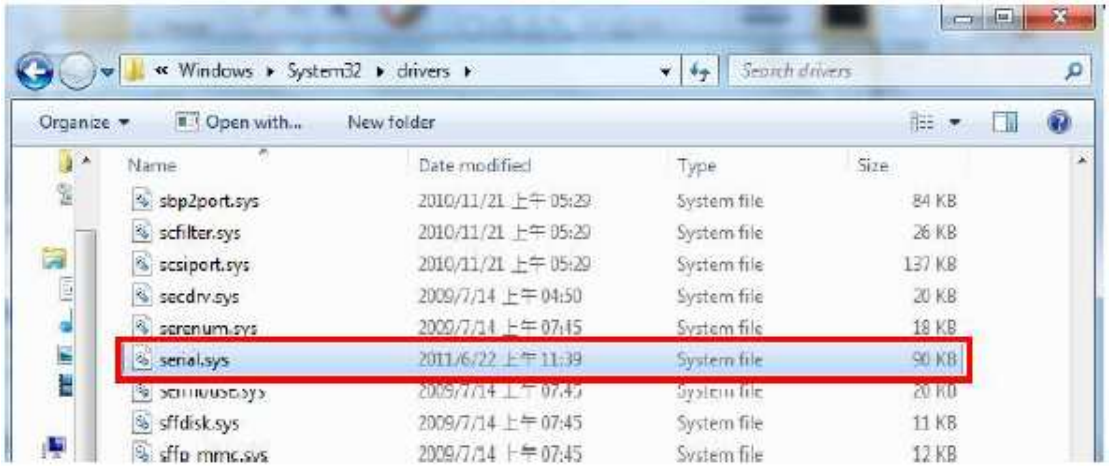
STEP 3.Double-click batch file(patch.bat) will install driver.

STEP 4.Check driver install success.

Before the update or update fail.


« Windows ▸ System32 ▸ drivers ▸
Search drivers
Organize
Open with...
New folder
Name
Date modified
Type
Size
sbp2port.sys 2010/11/21 上午 05:29 System file 84 KB
scfilter.sys 2010/11/21 上午 05:29 System file 26 KB
scsiport.sys 2010/11/21 上午 05:29 System file 137 KB
secdrv.sys 2009/7/14 上午 04:50 System file 20 KB
serenum.sys 2009/7/14 上午 07:45 System file 18 KB
serial.sys 2009/7/14 上午 07:45 System file 82 KB
sermouse.sys 2009/7/14 上午 07:45 System file 20 KB
sffdisk.sys 2009/7/14 上午 07:45 System file 11 KB
sffp_mmc.sys 2009/7/14 上午 07:45 System file 12 KB
sffp_sd.sys 2010/11/21 上午 05:29 System file 13 KB

After the update and update success.

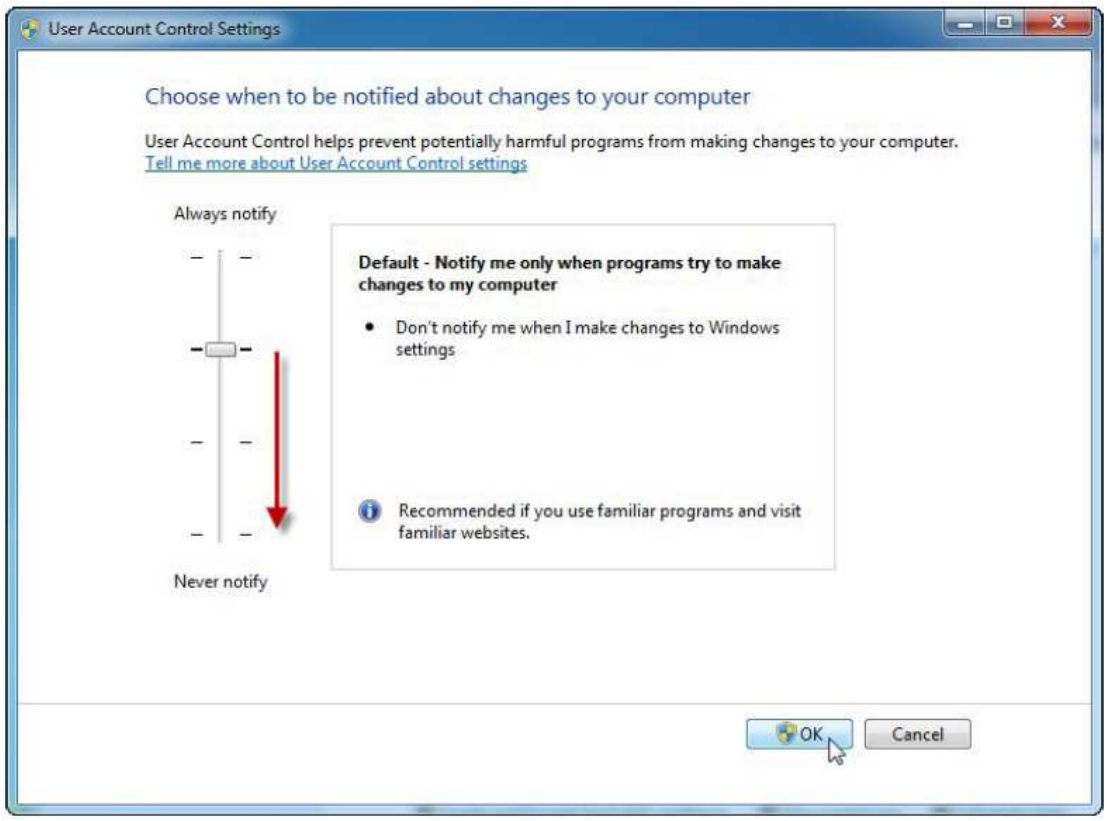

« Windows ▸ System32 ▸ drivers ▸
Search drivers
Organize
Open with...
New folder
Name
Date modified
Type
Size
sbp2port.sys 2010/11/21 上午 05:29 System file 84 KB
scfilter.sys 2010/11/21 上午 05:29 System file 26 KB
scsiport.sys 2010/11/21 上午 05:29 System file 137 KB
secdrv.sys 2009/7/14 上午 04:50 System file 20 KB
serenum.sys 2009/7/14 上午 07:45 System file 18 KB
serial.sys 2011/6/22 上午 11:39 System file 90 KB
sffdisk.sys 2009/7/14 上午 07:45 System file 11 KB
sffp_mmc.sys 2009/7/14 上午 07:45 System file 12 KB

STEP 5.You will need to restart your computer for driver install success.

Type in this command from the Run menu:

C:\Windows\System32\UserAccountControlSettings.exe or uac

To turn off UAC, move the slider to the Never notify position, and then click OK. If you're prompted for an administrator password or confirmation, type the password or provide confirmation.


User Account Control Settings
Choose when to be notified about changes to your computer
User Account Control helps prevent potentially harmful programs from making changes to your computer.
Tell me more about User Account Control settings
Always notify
Default - Notify me only when programs try to make changes to my computer
Don't notify me when I make changes to Windows settings
Recommended if you use familiar programs and visit familiar websites.
Never notify
OK
Cancel

To turn UAC back on, move the slider to choose when you want to be notified, and then click OK. If you're prompted for an administrator password or confirmation, type the password or provide confirmation.

You will need to restart your computer for UAC to be turned off.

CHAPTER 9

Intel® Management Engine Software Installation

This chapter offers information on the Intel® Management Engine software Installation.
Sections include:

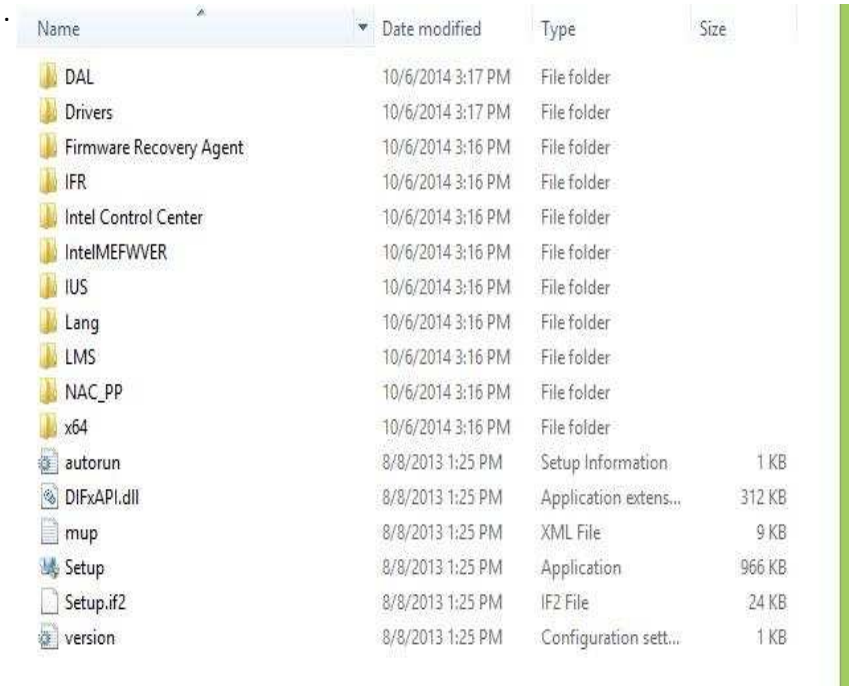
- Instruction
- Installation of Intel® Management Engine software

Chapter 9 Intel® Management Engine software Installation

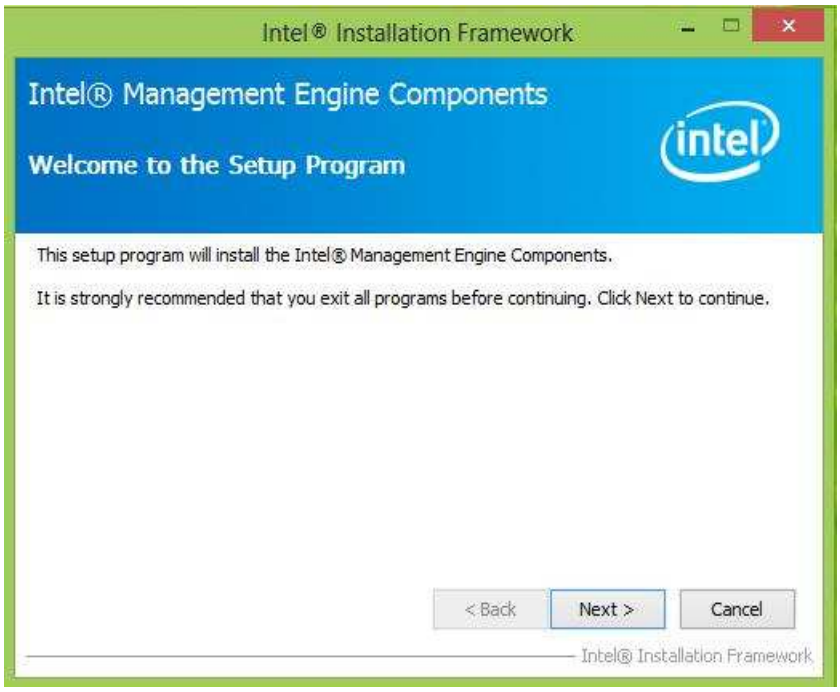
9.1 Introduction

This installation program installs the Intel® ME software components required for the platform on which you are installing, and installs only those components that match your platform's capabilities.

Step.1. Insert the driver CD and select the "Intel ME 9.0" folder and click "Setup.exe"


Name
Date modified
Type
Size
DAL 10/6/2014 3:17 PM File folder
Drivers 10/6/2014 3:17 PM File folder
Firmware Recovery Agent 10/6/2014 3:16 PM File folder
IFR 10/6/2014 3:16 PM File folder
Intel Control Center 10/6/2014 3:16 PM File folder
IntelMEFWVER 10/6/2014 3:16 PM File folder
IUS 10/6/2014 3:16 PM File folder
Lang 10/6/2014 3:16 PM File folder
LMS 10/6/2014 3:16 PM File folder
NAC_PP 10/6/2014 3:16 PM File folder
x64 10/6/2014 3:16 PM File folder
autorun 8/8/2013 1:25 PM Setup Information 1 KB
DIFxAPI.dll 8/8/2013 1:25 PM Application extens... 312 KB
mup 8/8/2013 1:25 PM XML File 9 KB
Setup 8/8/2013 1:25 PM Application 966 KB
Setup.if2 8/8/2013 1:25 PM IF2 File 24 KB
version 8/8/2013 1:25 PM Configuration sett... 1 KB

Step.2.Click the checkbox for Install Intel® Control Center & click Next.


Intel® Installation Framework
Intel® Management Engine Components
Welcome to the Setup Program
intel
This setup program will install the Intel® Management Engine Components.
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework

Step.3.Click on "Yes " to agree License.

Intel® Installation Framework
Intel® Management Engine Components
License Agreement
intel
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
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Please Also Note:
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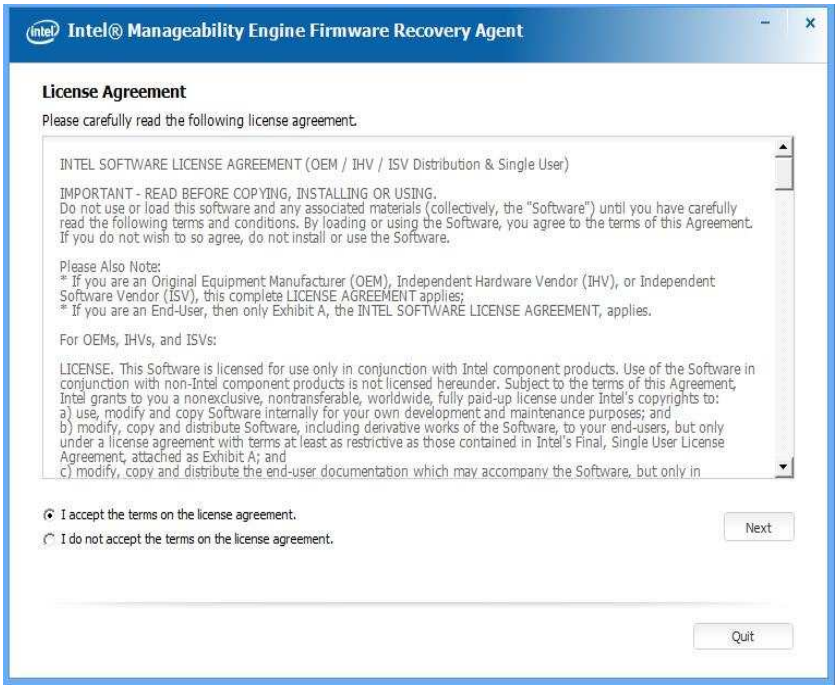
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework


Intel® Manageability Engine Firmware Recovery Agent
License Agreement
Please carefully read the following license agreement.
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IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
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* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT, applies.
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a) use, modify and copy Software internally for your own development and maintenance purposes; and
b) modify, copy and distribute Software, including derivative works of the Software, to your end-users, but only under a license agreement with terms at least as restrictive as those contained in Intel's Final, Single User License Agreement, attached as Exhibit A; and
c) modify, copy and distribute the end-user documentation which may accompany the Software, but only in
I accept the terms on the license agreement.
I do not accept the terms on the license agreement.
Next
Quit

Step.4.Click on “Finish“ to complete the software installation.

Intel® Installation Framework
Intel® Management Engine Components
Setup Is Complete
intel
The setup program successfully installed the following components:
- Intel® Management Engine Interface
- Intel® Dynamic Application Loader
- Intel® Identity Protection Technology (Intel® IPT)
- Local Management Service
Click Finish to complete the setup process.
Finish
Intel® Installation Framework

CHAPTER 10

Appendix

This chapter includes appendix items for this user manual

Appendix

Note1: Digital I/O Sample Code

To find the Digital I/O Sample code, please refer to the IH70 driver CD SDK or contact us.

Note2: Watchdog Sample Code

To find the Watchdog Sample code, please refer to the IH70 driver CD SDK or contact us.